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EDITORIAL COMMENT

Just look at that lineup of programs and authors, our Index almost didn't fit in the column. Where is your article and name?

None of these authors are professional writers, just users trying to pass on their experience to other users, and CN80 is the best vehicle to do that. Contributions to CN80 are welcome from everyone. We really like to run a variety of articles, from those directed at the very first time owner of a TRS-80 computer, all the way to the type of article that would interest even the most experienced user. Articles and Program submissions must be on a disk, saved in ASCII, with printouts and disk labels. We just don't have the time to key in programs. If letters to be published are very long and not submitted on disks they are set aside in lieu of letters that are on a disk until we have time to type them in. Generally we are more interested in how your program works and runs, rather than how you developed it. Hopefully programs published should be a learning experience for all.

A big hello to Al Boland of Wentzville, Missouri who stopped by for a visit while he and his wife were touring Yellowstone National Park and the Grand Tetons. Al is a Mod 4P user and a ham radio operator. Great to have someone drop by. If it had been any other day than Friday, that's the day we get our weekly construction news report out, we could have sat around all afternoon chewing the TRS-80 fat. Hope your return trip was safe and pleasant.



Coming Next Month
Special Feature Article
Using a mouse on your TRS-80
Without an interface.

FILE CABINET UPDATE

A CN80 Staff Report

TRSLINK BACK ISSUES

There are now 32 issues of TRS-80 Link[®] electronic magazine available. (Issue 32 -June 1990.)

We have had several requests for the complete collection, and realizing that \$48.00 dollars might be a little more that most people would like to spend for the whole set of back issues to date, we are making the whole collection available on floppy disks, (one single sided disk issue on a side) for 75 cents per issue. Orders must be for four or more issues to qualify for the 75 cents per issue. Single issues on standard single sided disks will remain at \$1.50 each.

SUMMARY

One issue \$1.50 on SS/DD disks.

Four or More issues .75 per issue \$1.50 per floppy disk. Postage included.

REASON

It is a great advantage to be able to receive this fine electronic magazine thru the mail when you only have single sided drives. You can also use them on double sided drives as well.

These disk can be used on Model I/III/4 or 4P and 4D, Model III requires LDOS 5.1 or higher, Model 4 requires LS-DOS 6.x or higher.

TRS-80 Link is also available for downloading from several Bulletin Boards. Check your local BBs, or downloaded directly from TRSLINK (215) 848-5728

NEW PROGRAMS AND CATALOGS

The new restructured File Cabinet Model 4 Catalog is not expected to be completed until September of this year. Starting with the next issue of CN80 we will provide a listing of new programs that have been added to the collection. You will be able to order the new program disks then without having to wait for the new Model 4 catalog in September.

Further plans for upgrading the Model 1/3 and other catalogs will be announced as they are completed. Look for the new program listings in the next CN80.

CN80 DISK SERIES NUMBER NINE

Some of you who have already received your disk number nine may have been surprised to see that the mailing contained two disks. That's right we had so much to place on the disks that it would not fit on one single sided 180K disk. So the second disk was added to hold Henry Leno's Car Maintenance program.

Then a late arrival came in from Danny Mullen which contained a program for printing our Product and Software Order Form. This we added to the second disk too. It will be available also in the File Cabinet Collection. Unfortunately the first set of disks that were mailed did not have this program on it. We do have several standing orders for the CN80 disk series. So those orders were filled as soon as we had the disks made.

(Note: If you would like to enter a standing order, just send \$5 per disk for as many of the future issues you would like to receive automatically as soon as they are assembled. There is one disk for each three issues and are issued quarterly. With the exception of disk #1, which contains the programs from the first six months of 1988.)

Danny Mullen's CNORDER/CMD prints out our order blank as shown in the display ad section, but as you enter the program you are asked for your name, address and etc. Then you can type in the quantity, product description, prices and other information, then send it to your dot matrix printer set at 80 columns. His reason for creating this program - well he just didn't want to remove pages from his CN80.

We have had that complaint from some of you before, and in the last issue we published a full page of the open order form. It was our hope that you who wanted to use that would just simply have copies made of the page. But not everyone has easy access to a copier, so Danny's program may be the solution. Right now it doesn't work too well on our daisy wheel printer (DWP410) as it wants to print the full 15 inch size of paper. But maybe that can be corrected. And since the program is written for TRSDOS 6.3.1 on the Model 4 it does not run on the Model III, but Danny has included the Basic Program, that

creates the /CMD program, the Assembly Language Source Code, and a document file explaining how the program works.

Because the assembly language source code is seven pages long, and the basic program is three and a half pages with many repetitive code lines we will not print them here. But the documentation file is printed in this issue. (see page 10)

(We wish to thank Mr. Mullen, who appears to be a very accomplished programmer both in BASIC and Assembly Language for all his work, there surely is a lot of time represented here.)

HINTS AND TIPS

=====

FINGER POINTING

by Dick Houston

Elton Wood's CHEKRITR/BAS program in the April, 1990 issue contained a little BASIC programming jewel that many may not have noticed. I have been intrigued by an occasional pointing hand in a menu but never got around to looking into how they were done. There it is in line 280 of Elton's program!

I'm ashamed to admit how many times I've looked separately at the figures produced by CHR\$(244), CHR\$(245), and CHR\$(246) and wondered what all those lines were supposed to represent! It was a reverse situation of being too close to the trees to see the forest! I'd never seen the three figures as one, but it is now SO obvious that the three, along with CHR\$(191) to fill in the wrist, make up a pointing hand!

Have other BASIC programmers been as dense as I have? I don't remember ever before seeing a program with that combination - or have I just been "looking in all the wrong places"?

So thanks, Elton, for pointing in the right direction, and may others find as much use as I plan to for:

CHR\$(191)+CHR\$(244)+CHR\$(245)
+CHR\$(246)!

MORE TIPS

by Danny C. Mullen.

TIP #1

After recent correspondence with Roy Soltoff of MISOSYS he indicated the following information about LS-DOS 6.3.1 with the ALPHA TECH patches he developed to recognize its extended ram:

— The new Bank Available Ram (BAR) locations are located at 414H to 417H.

"..low order bit of low order byte is associated with bank 0 whereas

the 2nd high order bit of high order byte is associated with bank 30."

Though not mentioned in his letter, I found the following:

-- The Bank Used Ram (BUR) locations are 410H to 413H.

NOTE: I don't know if Roy would mind this info being put out yet since he may be just beta testing it now... He didn't say not to.

— Though I don't know his plans, Roy has reworked DOUBLE DUTY to function with the AT patches (previously it didn't) and it now has a parameter to allow it to be in any bank recognized by DOS. You're no longer limited to banks 0-2. DDUTY (Bank=x) where x = any available bank from (1-29)

TIP #2

SUPERDRIVE, the ramdisk emulator supplied with ANITEK's SUPERMEM BOARD, has two undocumented parameters: /A and /H. These make SUPERDRIVE load all files from the source disk to the SUPERDRIVE ramdisk instead of just the /SYS files when making it a SYSTEM drive: (/A parameter)

Force its driver to reside in high memory versus low memory: (/H parameter).

ex: SUPERDRV 0,12/A/H

— SUPERDRV uses a similar BAR/BUR scheme as the AT patches mentioned above.

— In high memory, you'll find the words SUPERMEM ALLOCATION followed by some bytes (for my 512K version - 3 bytes): I don't know what the first one means, but the next two are the BUR bytes.

— In its low memory driver area, another SUPERMEM ALLOCATION is found: appears to be its BAR bit scheme in similar fashion.

TIP #3

- - W h e n d o i n g t h e Drecord,byte:Frecord,byte patches under TRS-DOS/LS-DOS, you can eliminate the verify part (Frecord,byte) by using the (O=N) parameter.

BEWARE - make sure your data is CORRECT before using this parameter!

TIP ON USING HARD DRIVES

by Henry A. Blumenthal

Unlike MS-DOS machines, most Model IIIs and 4s with hard drives have to be booted with a floppy, after which the floppy can be put away. But this is really a plus, not a minus. Because a floppy disk is required, this means that you can configure your hard drive system in a variety of ways, depending on your work session requirements. When you have things the way you want them, just do a sysgen on the floppy; it remembers everything.

In my case, I have my 20-meg hard drive for my Model 4 divided into four partitions, with three enabled in Model 4 mode and the fourth enabled only when the machine is booted via LDOS as a Model III. In Model 4 mode, I can further refine what I want and don't want on line: a choice of KSM files or no KSM at all; a choice of subdirectories that will be ready and waiting without having to call them up; and/or a variety of auto commands or no auto commands at all.

So if my wife, as a high school English teacher, has some work to do, she knows which boot disk to reach for. If one of my kids is in a games mood, he knows which disk to reach for. Etc., etc. One's entire software library may be on a hard drive, but the user doesn't have to look for a thing; the appropriate boot diskette puts whatever is needed instantly on line.

-Henry A. Blumenthal

TIP FROM CN80 - All hard drives are convenient, easy to use, fast, and give a false sense of security. All hard drives will crash sooner or later losing your files. FREQUENT BACKUPS ARE REQUIRED.

ASSEMBLY LANGUAGE TUTOR Part 18

by Christopher Fara (Microdex Corporation)

M e n u t a b l e s

Back in 1989 we developed a FONTS program with a simple menu (CN80 6/89:12, Z80 Tutor I:15). The routine went through a series of CP instructions, and if a key pressed by the user matched one of the valid comparisons, a jump was made to an appropriate segment of the program. That scheme is ok when a menu has few choices, but it's not practical in complex situations with many choices. The series of CP instructions would be too long and slow. To delete, add or change choices we must do a lot of confusing editing and re-arranging. A more flexible "universal" procedure can be designed, using a real darling Z-80 instruction.

CPIR

ComPare, Increment, Repeat. Scan a block of bytes anywhere in memory, and compare the contents of each memory location with the contents of register A. Before writing this instruction we set up registers as follows:

HL=> start of block to scan

BC= length of block

A = byte to find

If a match is found then the scan ends, Z-flag is set, HL points to the byte right after the found one, and BC contains the number of bytes still remaining to be scanned in the block (if the match is the last character in the block then BC=0). If there is no match, then Z-flag is reset NZ, HL points to the byte right after the end of block, and BC=0. Whenever BC=0 then the Parity flag is reset PO (Parity Odd) otherwise it remains set PE (Parity Even).

Alert readers will notice that the idea here looks similar to the LDIR instruction (CN80 2/90:4), and in fact both belong to the same "block transfer and search group" of Z-80 instructions. So we can guess that there must be another instruction similar to LDDR.

CPDR

ComPare, Decrement, Repeat. Scan a block of bytes "backwards". Before writing this

instruction we set up registers as follows:

HL=> end of block to scan

BC= length of block

A = byte to find

Like in CPIR, a match sets the Z-flag, BC contains the number of remaining bytes (BC=0 if the match is the first byte in the block), but HL points to the byte right below the found one. Similarly if there is no match then Z-flag is reset NZ, BC=0, but HL points to the byte right below the start of block. As in CPIR, the Parity flag indicates when BC has been decremented to zero.

Both instructions do the scan non-stop, just like LDIR and LDDR make an instant copy. If for some reason we want to scan a block one byte at a time and do something at each "stop", then we can use two other instructions which parallel the LDI and LDD principles.

CPI

ComPare, Increment. Before writing this instruction, we set up the registers the same way as for CPIR. After each comparison HL is incremented (points to next byte in the block) and BC is decremented. Z-flag is set if a match is found, reset NZ if not. Parity flag is set PE as long as BC has not been decremented to 0 (the scan has not reached the top of block yet), and reset PO if BC=0.

CPD

ComPare, Decrement. Same as CPI, except "backwards". Before CPD the pair HL must point to the end of the block, after each comparison HL is decremented, and the parity flag tells us whether the bottom of the block has been reached yet or not.

But let's go back to our menu problem and see how CPIR can streamline it. Suppose we have a program which incorporates three different procedures selectable from a menu. The listing is for Mod-III. As usual, in Mod-4 replace CALL 539 by SVC 10 (CN80 8/89:8, Z80 Tutor I:7) and CALL 73 by SVC 1 (CN80 8/89:9, Z80 Tutor I:17).

```
;-----
MENU:  LD    HL,ASK      ;address menu
        CALL 539         ;display it
        CALL 73          ;wait for key
        LD    HL,KEYS    ;table of keys
        LD    BC,TASKS-KEYS;how many
        CPIR             ;scan
        JR    NZ,MENU    ;no match
        LD    HL,TASKS   ;addresses
        ADD   HL,BC       ;double
        ADD   HL,BC       ;offset
        LD    E,(HL)     ;get low byte
        INC   HL          ;then hi byte
        LD    D,(HL)     ;DE=address
        EX    DE,HL      ;HL=address
        JP    (HL)       ;go for it
;-----
```

TASK1: ... routines go here

TASK2: ...

TASK3: ...

```
;-----
ASK:    DEFM 'PRESS 1, 2 OR 3'
        DEFB 13          ;terminator
KEYS:    DEFM '123'       ;valid keys
TASKS:   DEFW TASK3       ;addresses
        DEFW TASK2       ;of
        DEFW TASK1       ;procedures
;-----
```

Below ASK there are two tables: KEYS is a string of valid choices, and TASKS are 2-byte "word" addresses of the corresponding routines. But notice and remember that the tables must be arranged in reverse order to each other (the last item in KEYS, the key '3' corresponds to the address of TASK3 which is the first item in the TASKS table, etc). The reason for that will become obvious in a minute.

The key pressed by the user is returned in register A, we set up HL and BC, and CPIR scans the KEYS table. If the flag is reset NZ after CPIR then there was no match and the menu is redisplayed for another try. Otherwise we point HL to the beginning of the TASKS table, and add BC twice to point to the address of the procedure. For example, suppose '1' has been pressed. Therefore after CPIR the register pair BC has been decremented from 3 (the initial length of the KEYS table) to 2 (remaining bytes not compared yet). Adding 2 twice is like adding 4, so this addition will cause HL to skip the first 4 bytes in the TASKS table. Since each address in TASKS is a 2-byte "word", HL will now point to the third "word" TASK1. The next four instructions are our typical sequence which

transfers that "word" to HL. Then we JP (HL) directly to the desired procedure ("jump to the address contained in HL", see CN80 4/90:8).

Now suppose '3' has been pressed. It's the last item in the KEYS table, so after CPIR the pair BC=0 (no more bytes remain to compare). Adding zero twice won't change HL which will remain pointing to the beginning of the TASKS table where the address of TASK3 is stored. Similarly after pressing '2' the pair BC is decremented to 1 and added twice makes HL point to TASK2. No matter how many choices are listed in KEYS and how many corresponding addresses are in the TASKS table, this procedure instantly matches the correct address for the selected key. There is no upper limit (except memory, of course) to the number of choices that can be arranged this way. Keys and addresses can be easily added, removed and re-arranged in the tables without touching the main body of the program. The MENU routine can be re-used without change in any program.

Actually the tables don't have to be arranged in the order opposite to each other, as we did here. We could use CPDR instruction to scan the KEYS "backwards".

```

;
LD    HL,TASKS-1 ;end of KEYS
LD    BC,TASKS-KEYS
CPDR
;

```

The order of KEYS and matching TASKS must be now the same and this may feel more "natural" in the source listing.

```

;
KEYS:  DEFM '123'      ;valid keys
TASKS:  DEFW TASK1     ;addresses
        DEFW TASK2     ;of
        DEFW TASK3     ;procedures
;

```

In this case when '1' is pressed then BC gets decremented to 0 and so TASK1 can be at the beginning of the TASKS table, etc.

For the three choices in our example this routine (including tables) is 12 bytes longer than an equivalent CP-scheme (like in FONTS). If tight memory (rather than the convenience of a standard procedure) is the primary consideration then we might prefer to use the CP-method. Each additional choice shrinks the difference by 2 bytes, so already with 9 choices both methods will

have the same length, and with more choices the CPIR scheme will be shorter. Complex programs such as xT.CAD use similar schemes for instantaneous routing of the program flow to various procedures in response to dozens of different single-keystroke commands.

INC and DEC revisited

In the second version of the expanded "loader" last month we have used a new instruction DEC and did not provide the standard "box" definition. Hopefully not a big deal, since the context should have made its meaning apparent enough. But to keep things straight, here is the box.

```

;

```

DEC target

Decrement. Subtract "one" from a value in 'target' memory location which can be a single register, register pair, or memory location addressed by the register pair (HL).

```

DEC B
DEC DE
DEC (HL)

```

```

;

```

There is a curious thing about both INC and DEC instructions. Incrementing or decrementing a single byte such as INC A or DEC (HL) sets or resets Sign, Zero and Parity flags depending on the result (Carry is not affected). But INC and DEC applied to a register pair (eg. INC DE or DEC HL) do not affect any flags at all. Sometimes this is convenient, because we can increment or decrement register pairs and after that still can check the status of flags triggered by some previous operation. We've been silently taking advantage of this in previous essays, for example in the MOGET routine (CN80 4/90:7). On the other hand without the flags we don't have a convenient way of checking if the incremented or decremented register pair has reached some threshold value. So we must do the checking some other way.

Testing if a register pair has reached zero value is usually done by ORing the two "halves" of the pair. The result of OR is Not Zero as long as at least one of the bytes is not zero. If both are zero then obviously the pair is also zero. For example:

```

;-----
MORE:  ... here some processing
      DEC  DE
      LD   A,D           ;high byte
      OR   E             ;both zero?
      JR   NZ,MORE       ;not yet
;-----

```

To test for a "threshold" other than zero we could use the SBC instruction (Subtract with Carry) with the threshold value in another register pair. One of the pairs must be HL, however, because SBC can only subtract from HL. For example:

```

;-----
MORE:  ... here some processing
      INC  DE
      LD   HL,10000      ;threshold
      OR   A             ;reset carry
      SBC  HL,DE         ;test
      JR   NZ,MORE       ;not yet
;-----

```

These fragments would loop until DE reached the threshold value, in which case Z-flag would be set, JR NZ,MORE would be skipped, and the program would "fall through" to some following instructions.

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MY ADVENTURES WITH HARD DISKS

Part 7

by Roy T. Beck

UPDATING THE DOS ON YOUR HARD DISK OR CAN YOU CHANGE DOSES IN MIDSTREAM?

PROLOG

The other night (while reclining in my hot tub and admiring the stars; my wife was in the house reading and I was alone in the hot tub), I received a call from a man in Wyoming who was having trouble installing TRSDOS 6.3.1 on his newly acquired Model 4. Questioning revealed he had received the machine with TRSDOS 6.2.X installed on it and operating from a 15 Meg hard disk. He had purchased TRSDOS 6.3.1 to improve his operation, but as we know, the documentation accompanying 6.3.1 is sparse,

to say the least.

While the machine would boot and run happily with the 6.3.1, it gave no hint of recognizing the 15 Meg HD attached to its backside. What to do?

THE SOLUTION

I had never performed this specific update of a DOS on a working machine before, and could not remember all the details of the information which accompanies TRSDOS 6.3.0. Since the man assured me he had full backups of everything on the HD, I outlined what he had to do to reformat from scratch. Thinking about the matter later, I decided I had missed the easy solution to his problem. I will now try to outline the steps to be performed in this situation, in case someone else faces the same task. I will not go into the why's and wherefore's; your original DOS manual plus the documentation you received when you purchased your DOS 6.3.0 update is adequate for that.

First, I will assume the machine is able to run properly from the hard drive, and is booted up from a floppy on which is SYSGENed the necessary CONFIG/SYS file. I also assume the configuration has drives :0 through :3 on the hard drive, and drives :4 and :5 are floppies.

BY THE NUMBERS

The steps are as follows:

1. Boot the machine under the existing DOS, 6.2.X or 6.3.0.
2. Make several fresh backups of your original 6.3.1 disk.
3. Place a new copy of LSDOS 6.3.1 in drive :4.
4. Issue the command `BACKUP :4 :0(SYS,INV)` to move the new system files onto the system partition of the hard drive.
5. If the previous DOS was 6.2.X, then issue the command `DATECONV :n ENTER` for each partition of the hard drive. If the system objects to this command, then repeat it with (CS) appended, as `DATECONV :0(CS) ENTER`. This step may be ignored if 6.3.0 was previously properly installed. If not sure, do it anyway, it won't hurt anything.

6. Now replace your previous hard drive boot disk into floppy :4 and issue the following commands:

```
BACKUP :0 :4 (I,S,OLD) ENTER
DATECONV :4 ENTER
MEMORY (A=X'3B',B=0) ENTER
MEMORY (A=X'85',B=99) ENTER
MEMORY (A="Y",B=255) ENTER
SYSGEN (D=4) ENTER
```

For interpretation of the commands, see your DOS and Tech Ref Manuals.

SOME GOTCHA'S

If you ever have to reformat a hard drive using the TRSFORM6/CMD program supplied with TRSDOS 6.2, use the DATECONV :n program on each partition afterwards so the partitions are valid for 6.3.X. Roy Soltoff supplied a patch in your 6.3.0 update doc's to avoid the need for this step.

If you plan to use DS floppy drives, be sure you get at least Level 1B of 6.3.1. Level 1A has a small bug in the FORMAT command which causes it to write DS disks with a defect in the directory. You can send your disk to MISOSYS for correction, or you can patch it yourself, using the patch information in Roy Soltoff's "The Misosys Quarterly", Winter 1989/90. If you are only using single sided drives, don't worry about it. Hold off until some more pressing reason comes up for updating. Actually, the change level is now up to Level 1D, per an article in TRSLink #31. You can either make the changes yourself, or send the disk to Misosys for updating.

OTHER DOCUMENTATION

Mod 4 by Chris (Fara), sold through Computer News 80 is a good general source of information about TRSDOS 6.3.0.

IN CONCLUSION

The answer to my original question is Yes, you can switch DOSes in midstream. The DOS was designed to let us do this, and I believe most of the smarts for this purpose are in BACKUP/CMD. Whatever, the mechanism, it can be done.

It is important to realize that much of the DOS has been revised to some extent in issuing 6.3.1, and all of the system files have to be substituted by new versions. The BACKUP command with its various

parameters is the only possible way to do this without totally replacing the DOS partitions and starting all over, which was my original mistaken approach. While I am reasonably certain the man in Wyoming has had workable results, my advice was not the best, due to ignorance on my part and not having the documentation to hand when needed. Even after replacing the DOS files "on the fly", you must still create a new CONFIG/SYS file with the SYSGEN command so the updated boot disk will have a valid copy of the system configuration from which to set up the system at boot time.

- Roy T. Beck

MODEL I MODIFICATIONS

by Arthur N. McANINCH

64K RAM IN THE MODEL I KEYBOARD

Those mysterious re-boots and dropping dead syndromes of the venerable Model I with the Expansion Interface can be completely cured by installing 8 64k RAM chips in the keyboard in place of the standard 16k RAM chips. In addition, the RAM in the E/I is totally disabled. This solves many problems inherent in the design of the expansion interface.

The following modifications have been successfully accomplished on a "D" series board and on a "G" series board.

It is necessary to remove the keyboard and the main CPU board from the keyboard case. Twelve traces on the CPU board must be cut, and 14 jumpers must be added, so do not attempt this modification unless you are familiar with printed circuit board soldering practices. Extreme caution must be observed throughout the entire procedure.

Remove the old 16k RAM chips from their sockets, Z13 to Z20. Use a sharp X-Acto knife with a small blade to make the trace cuts, and inspect them with a magnifying glass. Small wire-wrap wire is used for the jumpers. The entire modification will take about two hours, including testing.

TRACES TO BE CUT

- (a) Remove +5v from pin 9 of Z13 to Z20
cut #1-#8 figs 1 & 2
- (b) Remove +12v from pin 8 of Z19
cut #9 fig 1
- (c) O/C *RAS from A73 pin 5
cut #10 fig 3
- (d) O/C Z73 pin 6 from Z21 pins 2 & 14
cut #11 fig 3
- (e) O/C A14 from Z21 pins 1 & 15
cut #12 fig 1

(note that cut #8 is on the component side of the board.)

Jumpers to be added:

- (a) +5v to Z19 pin 8
jumper #8 fig 1 (see diagrams in the program listing section.)
- (b) Z13 - Z20 pin 9 to Z51 pin 12
jumpers #1-#7
- (c) *RAS to pins 2 & 14 at Z73
jumper #9 fig 3
- (d) Z73 pin 6 to Z21 pins 1 & 15
jumper #11
- (e) Z38 pin 11 to Z73 pin 5 & Z51 pin 14
jumpers #11 & #12
- (f) Z38 pin 9 to Z51 pin 13
jumper #14

Now, install 8 128 cycle refresh 64k RAM chips in the sockets Z13 to Z20. Make certain that you don't try to use the 256 cycle refresh chips currently being produced. The chips you need are no longer produced; however, Computer News 80 as well as MISOSYS, Inc. currently have some available.

If you have an Expansion Interface, then the traces to Z40 pins 6 & 7 must be cut (cuts #13 & #14) and then joined together and pulled up to +5v by a 4700 ohm resistor (jumper #15) as in Figure 4. Then remove all the RAM chips from the E/I to save the power drain and resultant heat.

Use a black permanent marker to annotate

on the front of the E/I that the RAM chips are disabled, and a marking should be made on the keyboard case that there are 64k RAM chips installed. I installed a 64K RAM button from a Model 4 that had been upgraded to 128K on the keyboard for a professional appearance.

Now, the next project is to speed up the CPU. The nicest thing here is you no longer have to worry about the MRAS, MMUX, and MCAS circuits in the E/I anymore!

HIGH SPEED MODEL I

By today's standards, the 1.77 mhz clock speed of the Model I is almost creeping. Really, for the first popular microcomputer on the market, it has done well and continues to perform for many users. It is still the most gratifying computer for a hardware hacker to get it do things its producer never intended. Actually, provision was made in the original design for 2.66 mhz as well as 3.55 mhz, although 1.77 mhz was chosen for the production version since the chips available back then were not considered reliable at the higher speeds.

There are several things to be aware of before you attempt this modification. First, the Level II boards with the two-chip ROMS will not work with this speed-up. Also, the later units with the XRX III board (a 500 baud wave-shaper for cassette input) must have the XRX board deactivated in order to function with this mod. Third, Expansion Interfaces manufactured after January 1980, must also be modified to function with these speed-ups. And, fourth, if your Model I is extremely early, you may need to replace the old 16k RAMS with newer ones. If you have installed 64k RAM chips in your keyboard and deactivated the E/I RAM prior to this modification, you won't need to worry about these last two concerns.

HARDWARE MODIFICATIONS

You will need a 74LS02, a 74LS74, and a 74LS367, some wire-wrapping wire, a small soldering iron along with small diameter rosin-core solder, and a sharp, small bladed X-Acto knife for this modification. Standard printed circuit board wiring practices must be followed. Watch out for solder bridges and excessive heat, and watch for cold solder joints as well.

Locate Z56 on the circuit board, and cut the trace from pin 8 to the plated thru hole. Mark this hole, for you will run a wire to it later. Now, piggyback a 74LS02 on top of Z53. Carefully bend all the leads except pins #7 and #14 parallel with the top of the chip, and seat it on top of Z53 so that the dot or the notch is oriented in the same direction with Z53. Then, carefully solder pins #7 and #14 to the corresponding pins of Z53. This new circuit is PORT 254 and we will call it Z53P.

Find Z52, and solder a wire from pin #6 of Z52 to both pins #2 and #3 of Z53P. Then connect pins #1 and #12 of Z53P together. Next connect a wire from pin #3 of Z22 to pin #5 of Z53P. Now, solder together pins #8, #9, and #13 of Z53P. A BASIC command OUT 254,X will activate Z53P at pin #4.

Identify Z26, and piggyback a 74LS74 on top of it. Again bend all pins parallel with the body except #7 and #14. Be certain to orient it in the same direction as Z26, and then solder pins #7 and #14 to the corresponding pins of Z26. This new circuit is called Z26P.

Connect a wire from pin #3 of Z26P to pin #4 of Z53P. Run a wire from pin #4 of Z59 to pin #2 of Z26P. Now, connect together pins #1, #4, and #14 of Z26P. The BASIC command OUT 254,0 will flip the circuit, and the command OUT 254,1 will flop it. Thus, it will be possible to software select your clock speed after the rest of the modification are complete.

The 74LS367 must be piggybacked on top of Z44. In a similar manner to the two previous piggyback installations, bend all pins except pins # 8 and #16 parallel to the body. Install it in the same orientation with the other chips on the board, and solder pins # 8 and # 16 to the corresponding pins of Z44. Call this circuit Z44P.

Connect a wire from pin #8 of Z56 (from where you cut the trace as you began) to pin #2 of Z44P. Run a wire from pin #3 of Z44P to the plated thru hole beside Z56 (the other end of the trace you cut from pin #8 of Z56).

Run a wire from pin #5 of Z26P to pin #1 of Z44P. Now, when OUT 254,@ is given,

NORMAL speed will flip in place. Connect pins #3 and #13 of Z44P together. Run a wire from pin #15 of Z44P to pin #6 of Z26P. This enables the command OUT 254,1 to flop the CPU to the faster speed.

At this point, you have a choice which speed to wire up as your faster speed: either 2.66 mhz or 3.54 mhz. You may desire to try each one, one at a time before you permanently button everything up.

For the 2.66 mhz as the faster speed, locate Z43. Connect a wire from pin #2 of Z43 to pin # 14 of Z56. Now, run a wire from pin #12 of Z56 to pin #14 of Z44P. The modifications are complete for 2.55 mhz.

If you want 3.54 mhz, instead of the instructions in the previous paragraph, run a wire from pin #11 of Z56 to pin #14 of Z44P. For reliability, it is also necessary to tweak the memory select circuits, so locate Z69, and cut the trace between pins #5 and #12 of Z69. The modifications are now complete for 3.54 mhz.

Now if you have an Expansion Interface manufactured after January 1980, you will need to either install 64K ram chips in the keyboard and disable the ram within the E/I, or you need to do the following. Since Radio Shack modified the newer E/I's by using only the RAS line and then artificially generating a simulated CAS and MUX circuit within the E/I, the MRAS, MMUX, and MCAS signals totally ignore the speed of the CPU (keyboard). These newer E/I's can be speeded up by not delaying the RAS to produce MRAS, and creating MMUX and MCAS in the old MRAS and MMUX positions. You may need to replace the ram chips with chips rated a 200ns, at least. This modification to the E/I applies only to the newest boxes that do -not- need the buffered cable.

First, locate Z37 and Z38 on the E/I circuit board. Cut the trace that comes from Z38, pin 9, and call the trace farthest from Z38 Trace A. Then cut the trace from pin 8 of Z38, and call the trace farthest from Z38 Trace B. Now, cut the trace from Z37, pin 4, and call the trace farthest from Z37 Trace C. Prepare a small piece of wire-wrap wire and connect it as a jumper between Trace A and Z38, pin 11. Also,

connect a jumper from Trace B to Z37, pin 4. Finally, connect a jumper from Trace C to Z38, pin 9. The modification to E/I is now complete if you intend to continue using the ram within it.

Reassemble your TRS-80, and try out the different speeds by alternating the BASIC commands OUT 254.0 and OUT 254.1. Your Model I can now keep up with an early Model 4 and even out perform a Model 3! If there is trouble, turn your system off and recheck all your work. If everything looks correct, then you probably need to replace your memory chips with faster ones.

As mentioned at the beginning, if you haven't installed 64K ram within your keyboard unit and totally disabled the ram within the E/I, that would be the next modification for you to undertake.

Happy Computing.

-Art McAninch

CN 80 ORDER BLANK DOCUMENTATION

by Danny C.Mullen

CN80 COMPUTERIZED ORDER FORM

Welcome to the 'on-line' order form for COMPUTER NEWS 80 products. This program will present a facsimile of the order form found in your issue of the magazine right on your computer; with one advantage - you won't have to photocopy the page or destroy your magazine anymore!

To use it, just enter just enter CN80 at the DOS READY prompt. You will be asked to enter your name, phone number, street address, city, state, and ZIP code. This information will be placed on the form in the correct place. Alternatively, you could just press the <ENTER> key to skip this part and fill in the form with this information later.

After entering the last item (press <ENTER> after each entry) the top 24 lines of the form will appear on the screen. You can move around by using the arrow keys, move the page up/down by using the shifted up/down arrow keys, or pressing <ENTER>

will scroll the form if at the bottom line. At any time the cursor is at the bottom of the screen, and there is more form to be shown, just use these same keys. <ENTER> will also jump to the next line when finished entering data on a line.

You won't be allowed to type in the header area even though you can move the cursor there. You won't be able type on any of the double lines or on any of the colon column separators. Use the arrow keys to advance past the colon characters. You can, if not careful, overwrite in the bottom area where the shipping/handling information is. You could make any correction to your address if needed, however.

By the way, just overwrite any errors you may make when filling in the form, no need to erase them first.

All totalling of quantities/costs/shipping and tax info must be done by you - just put them in the appropriate locations.

If you don't desire to use the order form 'on-line', you could just skip the entering of name, etc. at the beginning (by pressing <ENTER>) and just use this program to print a blank form on your printer.

=====

WHAT! NO PRINTER ??? Well, I suppose you could just use the DUMP command to dump the form to disk and good old Stan and company might just load it into their computer and print it there! You'd have to send a disk, though.

To do this, after exiting the program, enter the following command at DOS READY:

DUMP CNORD/TXT(S=X'8000',E=X'912F',ASCII)

(note, all on one line no spaces except where shown between DUMP and CNORD/TXT)

This would also give you a copy, on disk, of what you ordered if you desire.

To print this saved copy, enter the following at DOS READY:

LIST CNORD/TXT (PRT)

=====

Oh yes, to print the form, filled in or not, just press <CONTROL><P>. Make sure the printer is in 80 character per line mode or it won't look so good. If the printer is off line, you'll get a visual and audio warning and a chance to get it on line.

Finally, pressing <BREAK> will exit when finished.

SUMMARY OF COMMANDS

ENTER Moves to next line on form. Skips through information at beginning of program. Will scroll the form if at bottom screen line & more form exists.

ARROWS Move around the form. Move past colon column separators when entering data. Will scroll the form if at bottom screen line & more form exists.

SHIFT ARROWS Scroll the form up/down.

CONTROL P Prints the form on printer.

BREAK Exits the program.

I hope you can find this utility helpful - I can remember how frustrated I was when I couldn't find any of the order forms and refused to destroy my CN80!

-Danny C. Mullen

(This program will also be available from the File Cabinet. With some adaptation of the code we are sure that many readers could find several applications for their own form use. -CN80)

MORE ABOUT COMPUTERS

by David Dalager

MACHINE LANGUAGE

There are a lot of people that would like to "break into" learning machine language programming. Why? Because it runs much, much faster than programs written using Basic. There are many good books out in the world that have been written with the "novice" in mind. Guess I never got that far.

BOOKS

Don Ady has a good book on machine language programming. So does William Barden, and Rodney Zaks, and then we have Chris Fara's articles, and the booklet available from CN80 that Chris wrote — very good. Now when I go into doing something or think I might a little later, I go whole hog. I now own 5 different machine language books with some tutorials. I've enjoyed Chris Fara's very much. Chris uses a different approach — he does not assume that I already know how a microprocessor works. Refreshing. Chris also has some exercises that one can immediately try also. So do some of the others, like Don Ady's. But woe is me. I don't have enough time to astutely apply myself to the subject, and when I do get a little time, I've already forgotten what was learned before. Oh, how I envy some people. Maybe some day, soon I hope, maybe I can become a novice at machine language programming.

MACHINE LANGUAGE TEACHING AID

In casting about in the waters of machine language programming, I ran across an interesting group of programs written by Mel Patrick. Mel gave me some historical background that I'd like to share with you. Although these can be considered to be "simple", they do exemplify a number of approaches that one can take and run with. You get an opportunity to "see" how one programmer accomplished his goals by being able to examine his "source code" (/ASM). One gets to see how the video was handled, error checking or testing was done. Simply loads of goodies. Over the past couple of years, time has been spent, you could read that as blown since not enough time was spent in order to retain the information for later usage. But if the time could have been spent, machine language programming could be another of my accomplishments. I really do envy those with the time and feel sorry for those that have the time and don't use it. Why, there's a whole new purpose to Life.

JUST LOAFING

Appearances would indicate that some people are actually trying to learn machine language on the Model 4. At least judging from the number of requests Mel Patrick was getting for source code of his

programs. With that in mind, Mel was sitting around one day (very unusual for Mel), he decided to code up a simple program that would do something. While digging and scratching around for an idea, Mel came up with an idea to write a simple program that would display a message to the video screen and work with it's presentation.

WHY

The reason for using the video was two fold: 1) It's much easier to debug your programs when you are working with a visual feedback environment and 2) you can keep the code fairly simple.

ANOTHER GAME

The idea of using a game approach kept creeping into his mind. Games teach a number of things, and Mel decided that for the first time since 1981 he would write a game. The last one written was a SLOTS game for the Model 1 which was given away. Mel says "I didn't know what else to do with it." Obviously someone did and "borrowed" about 80% of Mel's program, added a couple of things to it, and sold it. The guy probably made some money off it. Which incidentally is why Mel has never written a game since. "However that's all in the past and this is now," says Mel. Most everyone with a computer of sorts can recollect having played the old HI-LOW number guessing game (yes, even the guys with the Hewlett Packard pocket programmables did it). Effectively what happened was that the computer was told generate a number in a fixed range, you spent the next 20 seconds guessing it. If it took you longer than that, better you should have used a coin and played heads/tails instead. Be that as it may, the computer told you if you were too high or too low and whether or not you were right. Well, that was the point of the game, wasn't it? Many people wrote what must be a truck load of these programs in BASIC (Mel included) and they had what we refer to as bells and whistles. Meaning they got "fancy". Multi-player, disk saving of high scores, playing against an opponent and even more were added to a rather mundane program idea in the first place. Of course all this just added to the growth of computers anyway, so not all was in vain.

/CMD AND /ASM FILES

In this group of files that Mel wrote, there are both /CMD and /ASM (/ASM in this sense will mean source) files. If you are learning machine language, it is always a good place to start by using a code written by someone else and making little changes and seeing what effect your changes have. Some words of advice: Write protect your drive 0 unless you know "exactly" what your code will do. It is totally possible to re-create (read that as: discombobulate) a DOS which doesn't boot or work anymore. If you have trouble tracing the program put in little @DSP (displays - see The Technical Reference Manual for the model 4/4P) to the video so you can see where and what you've written is doing. Watch that you don't foul up a register when doing this. If you want to trace program logic flow use a machine language monitor like OverVue (which Mel also wrote; is Public Domain and should be in The File Cabinet). Oh, it's also a good idea to make a backup....just in case of Murphy's law.

GAME #1

GUESS/CMD and GUESS/ASM. These are the first examples Mel created. You'll notice a complete lack of "polished" look about them when you type in the /CMD file. That is because they are what programmers call a SHELL. Basically they do all they ever will in checking, error trapping and displaying. They are really the core to which you hang a much more pleasing display. Mel said it took him about 2-3 hours to get this to where he liked it. Naturally Mel couldn't leave well enough alone, and then wrote Game #2.

GAME #2

GUESS1/CMD and GUESS1/ASM. These are Mel's "enhanced" versions of the same basic game as game #1. But with many modifications to polish the game up. It's still not great by any stretch of the imagination but maybe the kids will like it. Mel added sound and a graphic display. Because of the additional coding Mel had it do more extensive error testing.

LEARNING TOOLS/TOYS.

Both games can serve as learning tools. Routines are there to check limits of input, screen positioning, writing to the screen, memory mapping the video, cursor addressing, pseudo random number

generation, displaying and more. All it takes is for you to examine the routines to see what they do. Mel generally uses the K.I.S.S. method of programming (read Keep It Simple Stupid) but Mel claims he started to get carried away with this one. Once the initial Game #1 was completed it only took about 2 hours to code up Game #2. "If you left it for a week, wonder what I would come up with...."

These are Mel's contributions to anyone wanting to learn something about machine language. Mel says "If you want to "borrow" my work or these programs, be my guest, but PLEASE at least give credit to where you got them. These are not shareware but if you like what you see and it does help you, I'll consider my task completed. If you need info on exactly how a routine works, better to write me a letter and include \$0.50 for return postage." Send to: Mel Patrick, 8056 164A St.; Surrey, B.C., Canada, V3S 7S7. Mel's BBS is: FastPlus II BBS, (604) 574-2072, 300/1200/2400 24hrs

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(Note: GUESS/ASM, GUESS/CMD, GUESS1/ASM and GUESS1/CMD, are available on the File Cabinet's Model 4 Education Disk Number MD4EDU22. OVERVIEW/CMD and OVERVIEW/TXT are on the Model 4 Utility Disk MD4UTL35, and are listed as shareware. If you use these shareware programs, please support the author by sending the shareware fee requested. Do not send shareware fees to CN80, all shareware fees go directly to the author. The File Cabinet Disk fees are for the copying and distribution service only.-CN80)

TIME TO RENEW ?

If the last number on your mailing label is 90/07 - this is your last copy of your current subscription - and it is time to send in your renewal.

REPLACING EXTERNAL FLOPPY DRIVES - ALL MODELS

by Donald W. Ady

External drives are interchangeable with internal drives. Both need a connection to a 34 line flat cable and to a three line power plug. External drives are mounted inside a case with power supply. You can buy them used or new as a unit or as separate items. The single sided one I installed for Model 1 was removed from inside a Model 4 that got new double sided drives.

Be sure to power off before changing the drives.

Remove four screws that hold the case cover in place. Slide the case off. Unplug the floppy cable and power cord. Turn the case over and remove two screws from the bottom that hold the drive in place. To reassemble, reverse the process. That's all there is to it. Sometimes, Complicating details can crop up in the drive number selection. If the drive does not respond as the drive number wanted, then read on.

Tandy drives with Tandy cables interrupt unwanted select lines by pulling contacts out of the cable plug. To change selection, you change the plug on the drive to another plug on the cable. That works except on some older single sided drive cables that will not support a double sided drive.

Non Tandy drives interrupt select lines on the drive PCB board. The number wanted gets passed through by what is usually a jumper: often labelled DS0 for drive :0 and DS1 for :1 etc. Move it to change the assignment if needed. On this style you can easily plug the floppy cable backwards. That's harmless but useless. Drives while on run all of the time. Power off then change the plug direction at the drive, or at the computer.

Mixing of incompatible cable and drive is often an easy thing to jury rig. Read on:

Select lines on 34 pin cable:

Wire #10 Drive :0 All models

Wire #10 Drive :2 M3/M4

Wire #12 Drive :1 all models

Wire #12 Drive :3 M3/M4

Wire #14 Drive :2 Model 1 only

Wire #32 Double sided, all

Wire #32 activates the read write head on the back of the diskette for double sided drives. On single sided Model 1 setups, #32 can otherwise select drive :3. The external drives on M3 and M4 get their signals shunted to lines that in other cases serve drives :0 and :1. If all four lines come through to the innards of the drive PCB, then selection is ambiguous. I tried this out for laughs on my Model 1, with only the one drive connected. DIR :0 and DIR :1 and DIR :2 and DIR :3 all showed the same listing! In this case all lines and the contacts in the non Tandy cable were intact. The Tandy style drive shorted all four select lines together on its PCB. This could be easily seen by examining the board on the drive. The lines ran together onto a perpendicular trace less than an inch from the plug.

In an earlier misadventure, I'd butchered a Tandy cable by trying to pull unwanted contacts. Isn't there an easier way? Yes, indeed. A small drill turned by hand with a pin vise works like a charm in cutting PCB traces. Leaving #14 intact to select :2 single sided for the M1, I cut the other select traces before they ran together on the drive PCB. Now it selects just fine as :2. Would it be easy to cut the wrong trace? Sure, but it's easy to fix with some solder.

A Tandy cable with some needed contact missing can be replaced by a new cable. But try this trick first: inplug the cable at the computer end, then flip it 180 degrees, and replug it. Ditto at the floppy drive end. If there is a web in the plug and a notch on the PCB, you need to cut a matching notch on the flip side of the PCB. This swaps ground lines, all intact, with signal lines, partly missing at the Tandy contacts. PCB traces short out 17 ground lines that come all on one side of the plug. Those are all odd numbered lines 0-33. If you do this for a Tandy drive to activate line #32, then you'll need to cut some traces on the drive PCB as I did for the Model 1 example.

Most floppy cases fit one full height drive. So far as I know the same case can take two half height drives. You need new mounting holes and Y branch fittings for floppy cable and for the power supply plugs.
-Donald W. Ady

TUNE DEVELOPMENT PROGRAM by Dick Houston

The Model 4 contains a tone generator circuit and a small speaker. By accessing the port assigned to the generator a machine-language programmer can play any desired tones and thus create music. Some of the File Cabinet disks provide programs that do just that.

For simpler use fixed tones can be called from BASIC with the SOUND command. The available tones can play simple tunes, but are most frequently used for alert signals, warning signals, fanfares for correct answers, etc. Such signals can add punch to a program.

The SOUND syntax is SOUND A,B where A is a number representing the pitch of the tone and B is a number for the desired tone duration. A can be 0 through 7, with 0 being the lowest pitch. B can be 0 through 31, with 0 being the shortest sound, approximately 1.5 second, and 31 giving the longest, about 12 seconds. An article in 80micro once said that the actual tones corresponding to the number A are: 0 C, 1 C#, 2 D, 3 D#, 4 F, 5 F#, 6 G, and 7 G#. I haven't had my computer close enough to my piano, my organ, or my frequency counter to check the accuracy of that information, but it certainly is OK for RELATIVE pitches of the tones.

If you aren't a musician, don't let the notes bother you - you can just do it "by ear" with my program. (See Program Listing One)

Two useful musical combinations, using the do-re-mi system, and not worrying about what key the notes are played in, are:

do - mi - sol: 1 - 4 - 7

do - re - mi - fa - sol: 1 - 3 - 4 - 5 - 7

Also you might try 4 - 1 - 4 - 1 - 4 - 1 for a European ambulance sound effect!

But enough musical theory! TUNEDEV/BAS gives you a way to try any combinations of pitch and duration for a "tune" of up to 10 tones. It also lets you play tones "piano style" on the number keys so you can pick out the ones you probably need. When you have found your tones, you record their

numbers then enter a pitch number and a length number for each note of your "tune". When you are finished, you hit any key to hear your composition.

Then you are given a menu from which you can choose to listen again, make some changes, try a new combination, sample the available tones ("piano style"), or end the session. Once you have found the right tune or sound effect, you can incorporate the required SOUND statements into your program or insert them into other programs. One thing you need to be aware of - if you attempt to play the same tone two or more times in succession, all you will get is a single tone with a short click where each new tone begins (BASIC CAN be fast!). You will need to insert a very short FOR-NEXT delay loop between tones. Something like FOR X=1 TO 5:NEXT X will do it nicely. TUNEDEV/BAS merely inserts the delay after every tone, and it sounds OK.

A disclaimer: TUNEDEV/BAS won't earn you a GRAMMY award, but you can have fun with it and add some nice touches to your programs or others.

-Dick Houston

SCREENS/BAS A Model 4 Utility

by Donald W. Ady

This article is a brief review of the SCREENS/BAS, referred to here as simply SCREENS for short. It is simple and useful tool to help display text or graphics or both in your BASIC programs. Level for general use: novice. Additional features also for more advanced programmers. Complicated screens with text and/or graphics become a cinch to design quickly. And, they tend to use less program memory than ones created conventionally.

SCREENS has been available from me for \$10. CN80 will carry it, via The File Cabinet (78K of disk space required for the files). The program itself has adequate HELP screens for casual use. The distribution disk adds a lot more to that on a variety of document files.

Text typing provides functions to position the cursor, type, overwrite, and erase. The Model 4 screen, 80 columns, and 24 lines, is used. The full screen is used, WYSIWYG, what you see is what you get. The usual and simplest application will instantly compile the screen into PRINT statement(s) on an ASCII BASIC format disk file. To add the screen to your own program, use MERGE. When compiling you are prompted for the line number to fit your application program.

The screen can also be saved temporarily without compiling to one of four memory "pages". It can be saved permanently for later compiling or rework on a disk file. Conventional BASIC methods to produce graphics are one terrible chore that is little but drudgery. SCREENS makes graphics quick and easy for even a novice. Drawing uses a single pixel cursor that can draw, skip, or erase. With less than 15 minutes of practice, you can should get the hang of it well. There is a simple method to trace line drawings - for non artist. Drawing motions are guided by the arrows and (better) the numeric keypad keys. Speed is widely adjustable. At any speed selected, the SHIFT key gives a useful speedup on long straight runs.

For intermediate programmers: documentation on disk tells how Z80 routines of SCREENS can be used in your own programs. Most useful of these perhaps is storing screens on disk and using direct I/O. SCREENS gives an example of that for its HELP. Only the size of the disk will limit the possible variety of display with hardly any program memory load at all. Of course you could also do drawing, typing, program direction menu functions, etc.

To barely mention a few technical details: Space compression codes require the normal (startup) state of the PRINT format toggle PRINT CHR\$(21). If this is in the wrong state, then the compiled PRINT will look weird, until you reboot or again use PRINT CHR\$(21). Codes 194 to 255 are used to represent from two to 63 blanks.

Video and keyboard memory on Model 4 mode are inaccessible to PEEK. They reside in special memory banks, which can be temporarily switched in at address &HB400 and higher. Many of the SCREENS routines,

if used in other programs, will require HIMEM set below &HB400, at least.

PRINT @ will usually not work as expected to change an indent on the compiled PRINT, unless WIDTH 255 is in effect. Model 4 BASIC PRINT contrarily insists on starting a context on a new line if not all of it fits at the indent on the one line. The PRINT compiler gets around this problem for indentless PRINT by allocating statement starts to the left margin. The WIDTH parameter and indent problem does not exist in Model 3 BASIC.

If you have questions on SCREENS, call me at (908) 277-3365. The phone co. is changing the old area code (201) to (908). Both numbers work for a year. A few readers might still have interest from earlier CN80 reviews of my packages for M1, M3, or M4 in M3 mode: LVE low vision editor, Stylus word processor, or Elixir. SCREENS is a small reworked subset of Elixir, for M4.

-Donald W. Ady
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A VISIT WITH DAVID GOBEN

by David Goben

Before I get right into the heart of talking to your laser printer (by the way, owners of other printers such as dot matrix and daisy wheels may find this month's information useful as well), I'd like to clear a few other things up.

40 x 100 SPREADSHEET MATRIX FOR BUSY-CALC

If you have been lucky enough to have obtained Busy-Calc for your Model 4/4P/4D from CN-80, but at the same time you need a LONGER vertical spreadsheet other than the 64 x 64 matrix that comes standard with Busy-Calc, PATCH LISTING ONE contains the -OFFICIAL- optional patches to BC/OVL so that it will afterward have a 40 x 100 (columns A-AN, rows 0-99) matrix. Apply the patch (-only- if you want this change, -and- on a BACKUP copy of

Busy-Calc) using the command PATCH BC/OVL BC40X. If you have obtained the inexpensive enhancement upgrade to Busy-Calc; Busy-Calc64, use PATCH LISTING TWO, and apply it to BC64/OVL using PATCH BC64/OVL BC6440X. Feel free to give copies of these two patches away, or put them on your favorite BBS, so that the many people who are choosing Busy-Calc as their spreadsheet of choice can take advantage of these patches if they choose to.

MAIL BAG

Next off, for WNM of Detroit: MI, I believe that the the reason RAMDRIVE will not work with LS-DOS 6.3.1 is that, if you are using double-sided drives, the directory is 34 sectors long, and RAMDRIVE is expecting it to be 36 (as it was for LS-DOS 6.3.0 and previous). Thus the Record Out of Range Error will crop up when it looks for the non-existing 35th and 36th sectors. For JPJ of Fairmont, WV: you're right, Model 4 VisiCalc is slow as molasses in winter compared to Model III VisiCalc. A lot of it has to do with the III-version being able to access the screen directly, the SMALLER screen size, and the fact that the Model 4 version has to access extended memory (in a awful manner, to boot). Why not try Busy-Calc (plug, plug), which is much faster on the Model 4? I don't understand the reason for incompatibility between the 2 VC versions on a particular file, unless of course you recently upgraded your DOS and copied the Model 4 to Model III with the date extension changes. Try using a program like UNDATE, found on DAVID'S SYSTEM UTILITIES DISK, available from CN-80. It can remove the date extension of just a single file (as well as a whole disk). Other than that, I don't know. The VC file formats between the two versions is identical.

ANOTHER UNDOCUMENTED 1.3 FEATURE

For those of you complaining that PROTECT/CMD, a scroll protect program I presented a few issues back to accompany VIDX/CMD, will not work on TRSDOS 1.3 for the Model III are wrong. It -does- work, it's just that I have found -another- undocumented feature of TRSDOS 1.3 — it will turn off scroll protect when it comes back to the TRSDOS Ready mode. Thus

PROTECT does in fact poke the scroll protect value into the system, but as soon as DOS level control is returned to, the DOS turns it back off. Of course, if you applied the optional patches to VIDX to make it use the Model I scroll protect address, and VIDX is resident in high memory, then it -will- work. Geez, I understand the reasoning behind some of these (many) undocumented features, but hey, why not let us know about them so we won't be ripping our hair out?

LS-DOS 6.3 BOOT-UP GRAPHICS

Last time I promised you 6.3 (and potential 6.3) users that I would provide you with patches so that you could boot up with a graphics logo (I still don't understand why people feel this is so important, but I guess I have my own personal little likes about some things as well). Well, here it is. I had said that I would also provide patches for 6.3.1 to boot. I will, however, hold off on the 6.3.1 patches until I am sure that the few recent patches issued by MISOSYS for 6.3.1 will not interfere with them. Those MISOSYS patches are minor, and will in fact not matter to most users, and I'm sure that they will not interfere with these screen patches, but I would like to hold off for a month or 2 to check to see if they will still work trouble-free (worse things have clobbered me over the head).

The patches for 6.3.0 are in the program listing section labeled as PATCH LISTING THREE and PATCH LISTING FOUR. Use a text editor, such as TED, to create the ASCII files, and save listing three as BOOT63A/FIX, and listing four as BOOT63B/FIX. Of course you may wish to modify the lines in BOOT63B/FIX to reflect your own personal message or address, just -don't- change the line lengths. It is -very- important that they contain 27 characters between the quotation marks! Next apply the patches to a system disk (a backup copy of your work disk, if you please) by entering PATCH SYS0/SYS.LSIDOS:d BOOT63A/FIX (O=N), where "d" is the drive number. Apply the second patch using PATCH SYS0/SYS.LSIDOS:d BOOT63B/FIX. Once these patches are applied (successfully), try booting the disk. You may be very surprised.

These graphics screens were developed by

Doug Mayfield of Middleburg Heights, Ohio for TRSDOS 6.2, and placed in the public domain. I changed them (I don't always do this because I don't always know better) so that you do not need to use a complicated transfer procedure using CMDFILE/CMD from the LDOS 5.3 mode to apply them. I felt that this procedure was tricky enough to turn most non-hackers away from the process. The direct approach, using the (O=N) parameter (that's OH, not zero) is -much- friendlier to those who prefer to stay away from hacker territory.

Now I take off my hacker's hat, and put on my print shop hat.

***** DOING IT ON A LASER PRINTER *****

Communicating with a Laser printer, or any printer for that matter, is a fairly easy thing to do, -if- you understand its language. Using a Printer Control Language (PCL) is not a complicated procedure, and is -much- easier to learn than BASIC. The nice thing about a PCL is that if you are a BASIC programmer, you can "talk" to your printer using the BASIC LPRINT command, and you machine language programmers can use the SVC @PRT command.

More times that I -ever- care to mention, people have asked me (and CN-80 has been asked as well) how to do those "tricks" on the printer, such as double wide, compressed, underlining, etc. But when I ask them if they have ever read the manual that came with their printer, 9 times out of 10 I hear, "Oh, that. I threw it away. I don't use those things." (There went some more hair).

Therefore, before we start drawing boxes and selecting different fonts and such, I think that it is important to first understand the various control codes that your printer understands, as well as have a working knowledge of things called Escape Sequences. It is also -strongly- suggested that you "crack the books" on your printer and familiarize yourself with what it tells you about communicating with it. It is actually pretty simple once you get the feel for it. Most manuals also include examples, usually for BASIC, which demonstrate the

various features. TRY THEM!!! Did I yell? The next thing you know you'll be creating "wow-em 'til their eyes pop out" documents.

UNDERSTANDING CONTROL CODES

The most complicated thing standing in your way is to run into a statement that says something like "Use ESC SO to select blah-blah-blah." So what is ESC and what in heaven's name is SO? If you ever tried entering LPRINT"ESC SO", did the printer start doing the feature, or did it simply print ESC SO? So what's the deal, Neil? You have just ran into control codes, and in this particular example, a thing called an ESCAPE Sequence. You have also ran into control code icons; the symbols people use to reference control codes.

Let's take a look at them. If you are curious about what the symbols represent, they were developed back in the early days of data communications, when talking to teletype devices and such were all done by modems. Those of you familiar with BBS systems will usually be familiar with some of these. In the following paragraph, I have listed the symbol (icon), followed by the decimal code that represents it in parentheses:

NUL (0), SOH(1), STX(2), ETX(3), EOT(4), ENQ(5), ACK(6), BEL(7), BS(8), HT(9), LF(10), VT(11), FF(12), CR(13), SO(14), SI(15), DLE(16), DC1(17), DC2(18), DC3(19), DC4(20), NAK(21), SYN(22), ETB(23), CAN(24), EM(25), SUB(26), ESC(27), FS(28), GS(29), RS(30), US(31), SP(32), and DEL(127).

You may notice that SP near the end of the listing to be simply the space bar code.

Those of you who have played around with your video screen control codes may recognize a few of these, and most people are familiar with several others, such as BS (backspace), LF (linefeed), FF (formfeed), CR (carriage return), and ESC (escape).

Using the above table (in case your printer manual does not contain a similar, and hopefully -better- one), you now know that if the manual states, "SO Enlarged mode ON," you know that you must send the code that represents SO to the printer (14, in this case), and not the text "SO".

ESCAPE SEQUENCES, VERSION 1

The next step is to understand these (stupid) things called Escape Sequences. The way they are listed in most manuals is in the example forms "ESC SI", or maybe "ESC 4" or even "ESC 3 n" or "ESC 3 (n)". (Once you understand this, you'll be a pro).

The key to untangling this mess is to understand the difference between the control code icons as straight text characters to type in, because most printers, such as dot matrix and laser printers, use a combination of BOTH icons and 'keyboard printable' characters, but 99% of the time the manual does not explain this difference, and this is what has made most of those people I mentioned before throw their manuals away. The thing is, the key to unlocking these differences is amazingly simple.

If the code for performing some task is not represented as a numeric code, but is pre-presented by MORE THAN ONE (here's the key) character (and begins with an alphabetic character), then the code is an icon, for which you can refer to the previous table to derive its decimal value. Thus If you look at a sequence that states "Use DC1 for such-and-such), you know that you send the code representing DC1 to the printer (17 in this case), instead of the text DC1. From BASIC you would send this character to the printer as LPRINT CHR\$(17);. Please note the semi-colon at the end -- this prevents BASIC from sending a carriage return (CR -- 13) to the printer afterward, and moving the printer head to the start of the next line.

If you then run into an escape sequence, such as "ESC SI", you now know that you send the codes for ESC (27) and SI (15) to the printer, such as LPRINT CHR\$(27);CHR\$(15);. Aren't you feeling like an expert already?

Next comes what most people consider a can of worms. But, considering the previously presented material, it will actually be a "piece of cake" to understand. If a symbol, be it alphabetic, numeric, or a special character, as long as it is 1 (ONE) character long, this means that this code is actually a -keyboard typeable- code. Thus if you see "ESC 7", this means that you will send the code for the ESC (27), and then

the -character- "7" to the printer. Thus you could use `LPRINT CHR$(27);"7";` (technically, when mixing characters and control codes in BASIC, you could get by without including the first semi-colon, but I'll leave that for you to figure out in your BASIC manual).

Finally, if you see a command stated as, for example "ESC - (n)" or "ESC - nn", or any combination of variable information, where (n) or nn represents a numeric value — usually a `CHR$(nn)` value, unless otherwise stated, this means that you would send the `CHR$` code for ESC, the keyboard character "_", and then a `CHR$` value of variable definition. For example, on my Epson Apex 80, and the FX-80 mode on my Laser printer, the command to turn underlining on is "ESC - (n)", where (n) can be either the code 1 (for on) or 0 (for off). Thus to turn it on, I would use `LPRINT CHR$(27);"_";CHR$(1);`. My manual tells me that I may optionally use the -printable-codes 1 and 0. Thus I could also turn underlining on by using `LPRINT CHR$(27)"_1";`.

ESCAPE SEQUENCES, VERSION 2

When Hewlett-Packard came out with their LaserJet printers, they decided that to take full advantage of the printers, that they must write a totally new PCL for it. The bad news is, it does not always follow the rules outlined above, but the good news is that it is a whole lot simpler to use. The reason is that -each- command to the laser printer begins with the ESC code (27), but that is basically the -only- control code you really have to remember, as just about everything else is keyboard typeable data, -even- the variable values. The only control codes that The Lasers accept are ESC (27), which tells the printer that it is about to receive a command, LF (10), the linefeed code, CR (13), the carriage return command, FF (12) the formfeed command, SO (14), which selects the secondary font, and SI (15), which selects the primary font. All the rest are typeable text, even if you are entering a value of, say, 100.45 as an argument for a command.

One handy "first" printer command to learn is to set the printer to automatically send a linefeed after a carriage return. This is a handy command as most Tandy printers do

this automatically, and this also means that you will not have to add a filter to your computer to do it for you. This command string, from BASIC, is `LPRINT CHR$(27)"&k1G";`. Notice that letter case is very important here.

After a couple more visits with me, you will understand all these strange special control symbols such as "&", "*", and "(" . And being familiar with them, you will not longer be intimidated by them.

Now that you know just as much about control codes and escape sequences as I do, try going through your printer manual with this fresh perspective and tackle those once-hard commands. You will find yourself saying "This is child's play!"

So, this introduction to the "hard" part of printer interfacing being over and done with, the next time we will be looking at how to take advantage of the laser printer's features. Although I will be covering the Hewlett-Packard LaserJet PCL, you will notice that (virtually) all laser printers are compatible with its Printer Control Language. Before you know it, we will be drawing boxes, shading with gray-scales, and using various typefaces with ease. Looks like potential desktop publishing to me.

Until next time, happy computing!
-David Goben

SEIKOSHA SP-2000 PRINTER

We were asked if we would publish a review or some additional information on the printer we advertised. So much as this tight space will allow, here are a few more of the details.

It is a nine pin print head.
Near letter quality is quite good. With 10, 12, 17, and 20 characters per inch pitches.

It will use either fabric ribbon or Multistrike Film Ribbon. And has Epson and IBM resident emulations. Epson is used for TRS-80 computers. Two print styles, 178 characters and 50 graphic characters in the standard mode.

Standard centronics cable connections, with the cables well out of the paper path.

TRSDOS 1.3 PATCH UPDATE

by Henry H. Herrdegen

I have just recently come across TRSDOS 1.3 disks with a Mon Feb 20, 1984 date and no serial number, have never received any notice about this "new" release, and R.S. naturally was no help with an "obsolete" system. Can anyone out there enlighten me? Tandy, in their great wisdom, never put the updated version number on the disk, so it is still 1.3, not 01.03.03 as the bulletin 0312-14 proclaims.

Interesting enough, the spelling error in the HELP menu, "avaLIable", corrected with bulletin 15 (the last one Tandy sent me), is still there. Running this disk thru the patches of my PUP1.3, starting with PATCH1, seems to prove that all changes up to and including bulletin 14 are on it.

The only outward difference from the Jul 1 1981 version is the inclusion of the MODELA/III file, and the length reduction of the HERZ50/BLD file from 2 records to one. This file really contains only one single patch line, but the original had some copyright message attached, and a record 2 with a strange (funny?) message. Does anyone know who Joe the "Rummy Buzzard" is?

Running it thru the PATCHSC program, with <G>roup, 1 to 19, caused no problem whatsoever. The first 5 lines from PATCH6 will not find the string, and the Mon Feb 20 date remains, as does the 1.3 version number. It is not necessary to start at PATCH1, as the only "made" patch in 1 to 5 is the last line in PATCH4, the spelling error in file *8, at 4F9B, which can be applied in command mode, if you so desire, or by running PATCH4 as <S>ingle. Starting at PATCH6 will save about 5 minutes, but still it takes more then 15 min's to run PATCH6 thru 19.

If you want the 01.03.03 version number, then add the following lines 6 and 7 into the PATCH6/BLD file, it will then handle both the Jul 1 and the Feb 20 dates:

PATCH

```
*0:1(ADD=5036,FIND=312E3320,CHG=30312E30)
```

PATCH

```
*0:1(ADD=503A,FIND=4D6F6E20,CHG=332E3033)
```

Change the last 33 if you want to put your own version number on, 34 for 04, etc.

Another interesting wrinkle is the fact that one of Andy Levinson's' unpublished patch lines, correcting a double "to" in the error messages, will not take. They must have that one corrected somehow, not with that patch, and on the sly too. This line is the last one in PATCH8 (before the number update) in file *4, at 4F3E.

Go ahead and use PUP1.3 on this version TRSDOS disks, as on the old Jul 1 version. PATCH18 and 19 mentioned above are new ones, not included in the disk issue, and you probably have added them to the PUP library from the listings in issue 3.? . If not, do it now, they are another big step to make our good old 1.3 even better and friendlier.

A discussion arose in TRSTimes, when a reader claimed that his TRSDOS (as well as mine!) need an other string at *9 54E9 (PATCH18) then the one Gary wrote and the editor verified. I took care of that possibility by including both versions. One or the other will take.

TIDBIT

Ref.: Model III BASIC

If you generally load BASIC with the default 3 files, run some programs, and then want to run one which needs almost all memory, you are familiar with the message: "Out of Memory". Easy to correct, back to TRSDOS, load BASIC again, maybe this time with only 1 file, and everything is fine.

But annoying. I have such a program, which I mostly run after some others, and got fed up of re-loading BASIC. Put my thinking cap on, and came up with a line which checks for available memory, and, if not sufficient, reloads BASIC with 1 file and re-runs the program. It also forgives you if you run from DOS with BASIC FILENAME, and forgot to specify -F:1. Stuck at the very beginning, as the first working line of the program, it looks like this:

```
5 IF MEM<xxxxx then CMD"I","BASIC  
FILENAME -F:1"
```


The number of free bytes depends on what you need. I found 35000 sufficient for my program, which is about 3000 bytes long and clears 30000 for string handling. You may want to find your minimum needs, so as not to go thru the motions unnecessary. I am going to put that line now in other programs, just in case. Isn't it great that the Model III BASIC permits us such a short and easy fix?

NEW PATCHES

"PATCH18" & "PATCH19", new additions to PUP1.3.

Gary Campbell just published an interesting set of patches for the TRSDOS 1.3, which make the "COPY" function much faster. So much so, that I want to give you the chance to add them to the patch library for PUP1.3. Let me tell you how easy it is:

Use your work copy of PUP (you use a backup, not the original, don't you?) in drive 0 (already booted up with another TRSDOS disk, or override the AUTO command on the PUP), and type the following patch lines with the included Scripsit, calling the file PATCH18, exactly as shown (no margin, no tabs):

(See patch listing number 18.)

Another interesting patch group comes from Northern Bytes, replacing the slash at the date input with the more convenient period. I have added a line in order to show the periods in the prompt also:

(See patch listing number 19.)

(Read thru the patch listings before reading further, then return to the text.)

Do not be alarmed when you see that one "String not found" shows up either at the 8th or 9th patch line, at ADDRESS 54E9, that is normal. Explanation? In the TRStimes following the publication of Gary's patches, a reader reported that the original byte string was not found when he attempted to patch his disks, and gave the 3 bytes needed for his disks. The Editor then warned that his disks patched ok with the original bytes. Tandy screwed up somewhere? Anyway, I checked all my TRSDOS'es, and all 8, with dates of May 1, May 2, July 1 and Feb 20 needed the new

bytes. So, I put both possibilities into the file, and one or the other will show "Patch made". For you who want to know: the original Gary bytes are C22352, the new ones supplied by Arthur McAnich are C3955F.

And if that little instruction prompts you to add other patches to the files, wherever you may find them and think you may like them, more power to you. If you do, please let me know, I am very much interested to make this package as complete as possible, and our TRSDOS 01.03.03 even friendlier in the process, sharing it with all our readers.

Adding to file "PATCHES":-

The list PATCHES was written with my ALPHALST program, published in CN80 1.12 and on disk 3 of the CN80 disk series. If you have it, you can easily add the 14 patch lines. 14, because the 15th, *0 5098 37-38, is already in the list. If you wondered why I ended the 8 byte patch strings after 6 bytes with two periods, maybe an explanation is due now: it is simply to allow 2 column printing. This list being meant only as a quick reference, to easily locate the patched files and addresses, the PATCH, ADD, FIND & CHG had been dropped and not all bytes listed. Just to identify the patch, not to type it.

If you have not got it, maybe now is a good time to add it to your library. I don't know of any other program that can write ASCII lists, name, rename, sort, add, delete, merge and print in 1 to 4 columns, paginated. (If you type it in from the listing, add "REM" or the " ' " in the first two lines and push the block identifiers, like 'MENU', 'SORT', etc. to the right margin, the type setter goofed.)

In the distributed documentation, this list was printed in single column (probably with the LIST function), so these shortcuts appear a bit odd. The full, functional patch line might as well have been printed in single column. But 2 column printing saves 1/2 the paper, space in your folder, and the abbreviated lines are fully adequate for the intended purpose.

If you had not noticed it yet, there is a duplication of line *0 5098 36-37. Please delete one of them. There also is a typo,

which could be misleading: the scripsit patch line: SCR 7004 000000-FEEDC9 should have address 7D04, not 7004! Sorry, I did not write a correction facility into ALPHALST (would somebody want to do it?), you have to delete the line and re-enter it correctly. And type the added lines in exactly using the same format, same spaces, period's, etc.

Have fun, and keep the "80" alive!
-Henry H. Herrdegen

SHEETING WITH BUSY-CALC

BUSY-CALC REVIEW by Ray Stanley

I am sure that you have better computer people working on a review of Busy-Calc than me, but here is my review of David Goblen's BUSY-CALC program. (Busy-Calc for the Model 4/4p/4D. \$79.85, plus \$4 S&H.)

First I should fill in a little background. For almost 20 years BC, that's "before computers" I have been a avid detail taker. I keep details on everything, how much gas we buy for the family car, how much gas for the tractor, how much dog feed goes to our four dogs, etc. Some day I am going to figure out how to hitch those dogs to the plow and get rid of the tractor. My wife is no good at keeping records, she writes three checks and maybe, just maybe writes two of them in the check book. She claims that "how come she has to add and subtract the checks, we pay the bank to do that for us, don't we." That means I have to keep a checking account balance that would support the Titanic, just in case. Lucky most of the merchants around here know us, so when I get a call saying "Mary did it again". They are always nice about it though.

Well since I got my computer a couple years ago, I still had to keep all those records in those little individual record books that you can get at K-mart. The only problem was that I never could get the time to add up the totals till once a year, if then. Which

means I got all the details on a lot of things, but really don't know how they relate to our farm and family life.

My good friend Ted, who lives about 30 miles away on his spud farm. That's potatoes, not horses. Always told me that the easiest way to get those records together, and have them total themselves, was to get a spreadsheet program. Ted (that in our computer group stands for "The Experienced Dude"), advised me that VisiCalc was a simple spreadsheet and easy to use for almost anything. Well I had been looking for one and just could not come up with an original version. Ted let me borrow his disk, but I didn't want to spring for \$40 bucks to get the manual copied. Besides I figured if I ever had the IRS men in and they wanted my computer stuff, I would get nailed for breaking the copyright law. Besides I like to have everything on the up and up, and Ted just couldn't have supplied me with the support I would need if I didn't remember all those / "that's slash-something" commands. So I thanked him for his good thoughts and never did get past the first look-see at Visicalc.

Then over the hill came a ray of light, via CN80 about David Goblen's new spreadsheet program. Which I bought and I am now filling page after page from my little record books into it.

I can even point the blank spot out to Mary in the Busy-Calc check book record, and tell her I just got to have something to go in there, or I can't turn the computer off and go to bed.

The first thing I noticed upon receiving Busy-Calc was unlike some manuals that stress reading the manual cover to cover before using the program, was that before I was barely into the Busy-Calc manual it was urging me to boot up a backup copy of the program and go through the examples as I read them. Of course I did.

The screen display is very clean and crisp, and if you are familiar with VisiCalc, the display formats are very similar. The first big difference I noticed was the menus. Rather than using the cryptic prompts that VisiCalc used, Busy-Calc presented clear, "plain english" pop-up windows. These I found to be the clincher that "sold" me.

I called my friend Ted, and said "you just got to come over for dinner Sunday and take a look at this thing."

Ted, after playing with it for 10 minutes or so told me that "even though it was not as full-featured as Multiplan (but then, neither is VisiCalc), he found it to operate much faster.

He reached into my disk files and pulled out his loaner copy of VisiCalc, blew the dust off it and showed me a few examples of what he was talking about. For example, after creating a fairly large spreadsheet, he experimented with inserting columns and rows. On VisiCalc the time it takes to insert a column sometimes is enough time to mow the lawn. And that is if the programs don't crash (He said he had learned early to forget about column inserts in large spreadsheets made with VC and MP because of this.) But not only did Busy-Calc do this without a problem, but it did it in only a matter of 2 or 3 seconds! I was definitely impressed, and so was Ted.

He also found the time for recalculation was significantly faster with Busy-Calc than with VisiCalc.

One thing that made Ted hesitate in using Busy-Calc was the fact that Busy-Calc supports only a 64 by 64 spreadsheet. After all, Visicalc supports a 63 by 254 sheet, and even Deskmate's WORKSHEET program supported a 99 by 99 spreadsheet. But then he figured because I only have 64K of memory that I couldn't make one that big anyway without running out of memory. I am about to get the chips from you guys to go to 128K. Means another Sunday dinner to get Ted to put them in for me.

Ted spent the rest of the evening showing me how to create a few useful layouts, he called them templates, that I could use just to give me some ideas. Each layout was saved to a file, and called the master for that spreadsheet. That way whenever I wanted to start a new spreadsheet that would match a previous one, all I had to do was to load the master file, then start filling in the blocks. Now I even get totals every day that I enter new data. I don't have to wait till the end of the month. One thing that Ted showed me that I think is very important, and that is when you set

up your spreadsheets, keep them small enough to be workable. Like one sheet per month that had the daily figures in it, and then set up a sheet with the same heading and enter the monthly totals in it as a recap sheet. Mary keeps calling it the retread sheet. But that's ok, we now have a bigger savings account, which is earning more than having all that slush fund in the checking amount. I may even get her to enter the check numbers and the amounts in to the computer. She does do all her letter writing on it now, and she still won't have to do the adding and subtracting.

Speaking of records, this is how you tell how much memory you have left. It simply reports how many cells you can create in the upper-right portion of the display.

In this day and age when support for the older programs is non-existent for the TRS-80, except what I get out of CN80, and friends like Ted, it is a refreshing breath of air that suddenly such a sophisticated program is released with full support by the author. With the quick reference guide that is supplied with the program, I haven't had to refer back to the manual anyway, much less contact the author.

Make mine Busy-Calc it sure has turned out to be a peace maker around our house.

I just can't wait to hear what those other users have to say about it. I am sure that they could give us many valuable tips on other uses for it. My son is already counting on it for his high school math courses. I think Ted even sent for a copy of his own, but he won't admit it yet. I'll let you know right after the next Sunday dinner at -his- house.

-Ray Stanley

(Editors Note) In this months VISIT WITH DAVID GOBEN, David presents the official optional patches to Busy-Calc so that you can convert the standard 64 x 64 spreadsheet into a 40 x 100 spreadsheet, for those of you who may need more vertical space.

OPEN FORUM

=====

Hi Gang, The following little note is the product of late night 'putering. Anyone stay-ing up till the wee hours of the morning should be excused from sanity especial-ly if trying to master a new program.

I only hope all of you enjoy it as much as I did writing it.

Have fun!!!

(It's saved in ASCII from Scripsit Pro on LS-DOS 6.3.1 (Edited with TED/CMD).

-Rick Hargraves

Dear Sirs, 5/12/90
I think I'm a little slow in responding but would like to tell ya that I like your mag'zine very much. I like the short simple progrums the best. Computers are new to us down here in Arkansaw and we're still learnin'.

While I was visitin' my Aunt in Missippy my Mama sent this letter and I'd liketo share it with ya'll. (I do love her dearly)

Also, when I find out my new address, I'll send it to ya.

Dear Son,
I'm writtin' this slow 'cause I know ya cant read very fast.

We don't live where we did when ya left. Your Dad read in the paper where most accidents happen within 25 miles of home so we moved. I won't be able to send ya the new address as the last family that lived here took the numbers with them so they wouldn't have to change their address. So, just look up Bubba when ya get back and he'll tell ya how to get here.

This new place has a washin' machine but it don't work right yet. The first day I put 4 shirts in it and pulled the chain and hadn't seen'em since.

It only rained twice this week, 3 days the first time and 4 days the second time. Fishin's a little slow right now.

That coat you wanted me to send ya, your brother said would be to heavy for the mail with them big brass buttons on it. So we

cut'em off and put 'em in the right front pocket. You can get Aunt Betty to sow 'em back on for ya.

Frendly Farley's Funeral Home sent us a letter sayin' we didn't make the last payment on Grandpas funeral and if we don't make it real soon, up he comes.

Your Father has a new job with 500 men under him. He's cuttin' the lawn at the cemetary. (Thats a joke, son. Your uncle Gus told it at supper last Sunday to help cheer us up 'cause of the funeral).

Your sister finely had that baby but I don't know if its a boy or a girl so I don't know if your an Aunt or an Uncle yet.

Your Uncle Phil fell in the whiskey vat at work last Friday, and when they tryed to pull him out all he did was fight'em off in fun. He finely drowned though. We creamated him last Sunday and he burned for three days. Farley said it was the darndest thing he'd ever seen.

Well, nothing much happing here, son. Your Fathers hollerin for more icetea so I better go.

I Love You, Mom

PS I didn't send money this time cause the envelope was already sealed.

My Mama sure is fun, isn't she? Please excuse her writtin', she didn't finish school like I did. Well, I hope ya'll injoyed this letter as much as I did. And sure am ankchus for the next issue of CN80.

Your Frend,
Jo-bob

(Editors Note) The above letter and punctuation is the sole product of Arkansaweze, written by a user who is hopelessly addicted to his TRS-80. We hope to hear more from Jo-bob in the future.

Q: Quite a few months (perhaps a year) ago, I noted in Computer News 80, in one of your regular columns, I believe, a request

for Model 12 equipment and software to be donated to a boy's club or some similar good cause. Recently, the Model 12 which I have owned but used rather little for several years became surplus to my needs and I would like nothing better than to see it and software (LeScript, Scripsit and Visi-Cal) put to good use. I will be glad to pay the shipping costs to an appropriate cause.

I have searched through my substantial stack of "Computer News 80" magazines but have been unable to find the reference which sticks in my mind.

I would appreciate a reference to that or any other agency which, in your mind would be appropriate for a donation of a Model 12.

-B. P. B. Santa Barbara, CA

A: If any reader would like to suggest an appropriate recipient of this equipment, please send your suggestion to CN80 and it will be forwarded to the donor.

There is also one worthwhile cause where you can donate your used equipment and receive a healthy tax credit besides. That is a donation to the

National Cristina Foundation
42 Hill Xewar Seicw
Pelham Manor, N.Y. 10803
(914) 738-7494 and 738-7494
or 1-800 Cristina

Yvette Marrin, PH.D, President

This non-profit organization places used computer equipment in schools and work centers for the handicapped. No computer is obsolete when it is used to help people in need lead productive lives.

Property contributed to the National Cristina Foundation carries an additional 50% of market, inventory and shipping costs value to the donar. In other words you may deduct 150% of the computers worth on your federal taxes.

Another source that can put so called obsolete computers and software to good use is your local school computer labs, or church groups, we urge you to contact your local computer lab teacher. While many

schools are selling off their old computers and buying new ones, many schools do not have the funds to purchase new computers. Besides, the school owned computers can't be used by the students to practice repairs on. What better experience is there than when a class can take an old computer and open it up to get at the innards. It certainly works in the automotive repair vocational education classes. How about your local boy scout group, do they have a computer training group? We also have one prison computer lab who is begging for any computer equipment, as there is no budget for them. (Information will be furnished on request if you would like to donate.) Almost any group can use used printers too.

We wish to thank B. P. B. for his generous offer and consideration, we also wish to thank him for reminding us of the importance of passing equipment on to those who can get good use out of it rather than trashing it. So if you have a computer in that garage sale that doesn't sell, don't junk it - someone will be very grateful to have it, if for no other reason than a learning experience. And please don't forget your local senior citizens groups either. -CN80

Q: I have a Tandy 4D with 64K (all the memory I'll ever need, I assure you), a Radio Shack DMP2110 printer that does absolutely beautiful work, the current LDOS, and the current version of SuperScripsit. I am very pleased with all my equipment, it does everything I want it to do — reliably, year after year, while other people's allegedly superior equipment crashes and burns out all around me. But I have one porblem I hope someone can help me with.

My equipment supports a number of fonts and modifications — Courier, Elite, Microfont, and some imported fonts as well. Modifications include enhanced type, condensed type, double height, elongated, italics, etc. My problem is that although I can get into condensed, double height, and elongated styles, I can not get my printer to let me change those modifications and/or return me to standard typefaces.

Suppose I'm doing a page in Courier and I want to insert a paragraph in italics in midpage — no problem. I send the printer code for the italics, type the paragraph, send the printer code for Courier, and that's what appears on the printout. If I'm doing a page in Courier and I want to insert a paragraph in condensed type or a subhead in elongated type, however, it's a different story. The printer will shift me to condensed or elongated (or double height), but will not let me return to Courier, no matter what codes I send it. I know it can do so, because it will cancel the modified type and accept a Courier code at 'the top of a new page'... but internal to a page, it simply won't make the shift back.

I've tried everything. My Radio Shack dealer, and the Fort Worth people he talks to, have been no help. They keep telling me I have to "turn off the modification," something I already know. But these three modifications — unlike underling, or bold, or super and subscripts — are not toggled mechanisms. I know the codes to turn them on and off from basic (27 14, 27 15, for instance); but I can't send those from inside SuperScripsit, and putting them in my System Setup on the Printer Codes menu doesn't work either.

Can you help? It would be a help if someone could just assure me that it can not be done, so that I could give up trying. It would be a help if I could know that is was a bug in my SuperScripsit, and patchable. And it would be wonderful to just be told how to do it. Thank you.
-S. H. E. Huntsville, AR

A: Your DMP 2110 dot matrix printer is a top-of-the line printer that has a wide range of word processing and graphic features, that prints with a high density print head and produces text that is close to the quality of a daisy wheel printer. Certainly no need for replacing that printer.

We do not have a DMP 2110 printer or manual, so we will have to make some "suggestive" comments based upon what information texts we have. And also hope that a user who has a DMP 2110 and SuperScripsit has already solved this problem and will let us know how he did it. Be sure your dip switches are properly set.

Next we need to know that the print driver you are using is the proper one for the DMP2100 and SuperScripsit. The print driver that you are using may not accept the codes as you are sending them. Print drivers are really code interpereters that work similar to a BASIC interperter file, that is one that changes the signals sent from the keyboard, or program to the proper ASCII codes that the printer understands.

Since your printer is ok, because it is printing the proper characters when you send them to the printer from a BASIC program. So the problem is more likely to be your SuperScripsit print driver.

From the SuperScripsit System Setup menu, the printer codes should work, i.e.

27, 31 Elongation Start, older printers
27, 32 Elongation End, older printers.

27, 14 Elongation Start, newer printers
27, 15 Elongation End, newer printers.

Check your printer manual for the correct Control Codes.

If your printer has both Draft and Word Processing settings set your dip switches to the Word Processing setting.

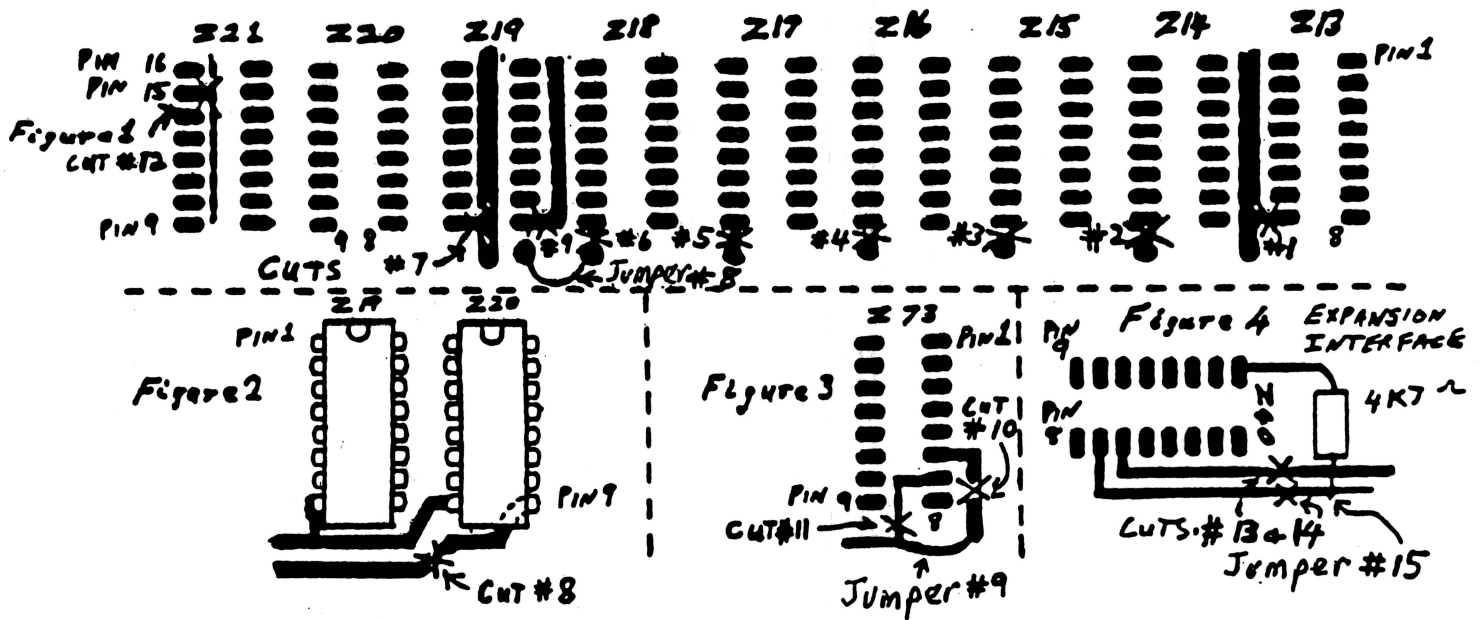
It should be something like this:

Code 1	27 14	turn on elongation
Code 2	27 15	turn off elongation
Code 3	27 18	select 10 pitch NLQ
Code 4	27 29	select 12 pitch NLQ
Code 5	27 19	select 10 pitch draft
Code 6	27 23	select 12 pitch draft
etc.		

Then your sentence should look like this:

<Clear>4 Now is the <clear>1 TIME
<clear>2 <clear>4 for all good men to come
to the aid of their country.

Which will print the text in 12 pitch near letter quality characters, with the word TIME enlongated. Or it should provided you have the proper print driver installed on your SuperScripsit.



Bug Report:

In the last issue; the caption for WHITEOUT Source Code, page 33 Vol 3 No. 6, should read for the "Model III only". If this model 3 program is run on a Model 4, it will place 1024 bytes of CHR\$(191) in the utilities overlay area of TRSDOS 6. The whiteout program for the Model 4 was left as an exercise for the reader.
-Merlin P. Walters.

The error is entirely CN80's and not the authors.

TUNEDEV/BAS Program Listing Number One by Dick Houston

```
10 ' ***** PROGRAM TO DEVELOP SOUND PATTERN *****
20 '          BY DICK HOUSTON
30 CLS
40 PRINT TAB(28) "TUNE DEVELOPMENT PROGRAM":PRINT
50 PRINT "This program will permit determination of the pitch and duration
   numbers"
60 PRINT "for a 'tune' of up to 10 tones.":PRINT
70 B=0:PRINT:INPUT "Do you want to sample the available tones? (Y or N)  ",A$
80 IF A$="Y" OR A$="y" THEN B=1:GOTO 550
90 CLEAR:CLS:DEFINT A-Z:PRINT:INPUT "Enter the desired number of tones:  ",N
```

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```

100 DIM P(N):DIM D(N):PRINT
110 '
120 ' ----- TONE ENTRY ROUTINE -----
130 '
140 PRINT "Enter your estimated values of pitch (0-7) and duration (0-31) for each
    tone: ":PRINT
150 FOR X=1 TO N
160 PRINT TAB(29)"Tone";X
170 PRINT TAB(29) "   Pitch:  ";:INPUT "",P(X):IF P(X)<0 OR P(X)>7 THEN SOUND
    0,1:GOTO 170
180 PRINT TAB(29) "   Duration:  ";:INPUT "",D(X):PRINT:IF D(X)<0 OR D(X)>31 THEN
    SOUND 0,1:GOTO 180
190 NEXT X
200 PRINT:PRINT "When you are ready, press any key to hear your 'composition' .":
A$=INPUT$(1)
210 GOSUB 470
220 '
230 ' ----- SELECT NEXT ACTION MENU -----
240 '
250 PRINT:PRINT TAB(22)"What now?":PRINT
260 PRINT TAB(27) "1. Listen again"
270 PRINT TAB(27) "2. Make some changes"
280 PRINT TAB(27) "3. Try a new combination"
290 PRINT TAB(27) "4. Sample the available tones"
300 PRINT TAB(27) "5. End the session"
310 PRINT:PRINT TAB(21)"Enter the number of your choice:  ";:INPUT "",A
320 B=0:IF A=4 THEN B=2
330 ON A GOTO 200,370,90,550,430
340 '
350 ' ----- CHANGE TONE(S) ROUTINE -----
360 '
370 PRINT:INPUT "Enter the number of the tone you want to change:  ",C
380 PRINT:PRINT "The current values for tone";C;"are:"
390 PRINT TAB(5) "Pitch:  ";P(C);" Duration:";D(C)
400 PRINT:INPUT "Enter the new values for pitch and duration (Pitch, Duration):
    ",P(C),D(C)
410 PRINT:INPUT "Any more changes? (Y or N)  ",A$
420 IF A$="Y" OR A$="y" THEN 370 ELSE 200
430 END
440 '
450 ' ----- PLAY COMPOSITION SUBROUTINE -----
460 '
470 FOR X=1 TO N
480 SOUND P(X),D(X)
490 NEXT X
500 RETURN
510 RUN
520 '
530 ' ----- SAMPLE NOTES ROUTINE -----
540 '
550 CLS:PRINT TAB(33) "TONE SAMPLING":PRINT:PRINT
560 PRINT "Press the numbers for the desired tones (0 through 7) one at a time."
570 PRINT "Return to the main program by pressing 8 or 9.":PRINT
580 A$=INPUT$(1):A=VAL(A$)
590 IF A=8 OR A=9 THEN 600 ELSE SOUND A,0:GOTO 580
600 ON B GOTO 90,250
610 END

```

PATCH LISTING ONE by David Goben

- . BC40X/FIX
- . Modify BC/OVL for 40 x 100 spreadsheet grid
- . 1990 David Goben

- . Usage:
- . PATCH BC/OVL BC40X

.
D0B,23=28;F0B,23=40
D0B,38=50;F0B,38=80
D0B,49=4F;F0B,49=7F
D0B,86=50;F0B,86=80
D0F,66=28;F0F,66=40
D11,12=63;F11,12=3F
D11,21=50;F11,21=80
D11,32=27;F11,32=3F
D11,39=B0;F11,39=80
D11,46=50;F11,46=80
D11,52=27;F11,52=3F
D11,86=B0;F11,86=80
D1A,75=30;F1A,75=3E
D1C,A0=50;F1C,A0=80
D22,60=28;F22,60=40
D22,88=64;F22,88=40
D22,F0=27;F22,F0=3F
D23,17=63;F23,17=3F
D23,50=28;F23,50=40
D23,54=27;F23,54=3F
D23,6A=64;F23,6A=40
D23,6E=63;F23,6E=3F
D2A,69=63;F2A,69=3F
D2A,6D=CD C7 7F;F2A,6D=BD 38 E2
X'7FC7'=3E 28 BD D0 C3 6C 52
. EOP =====

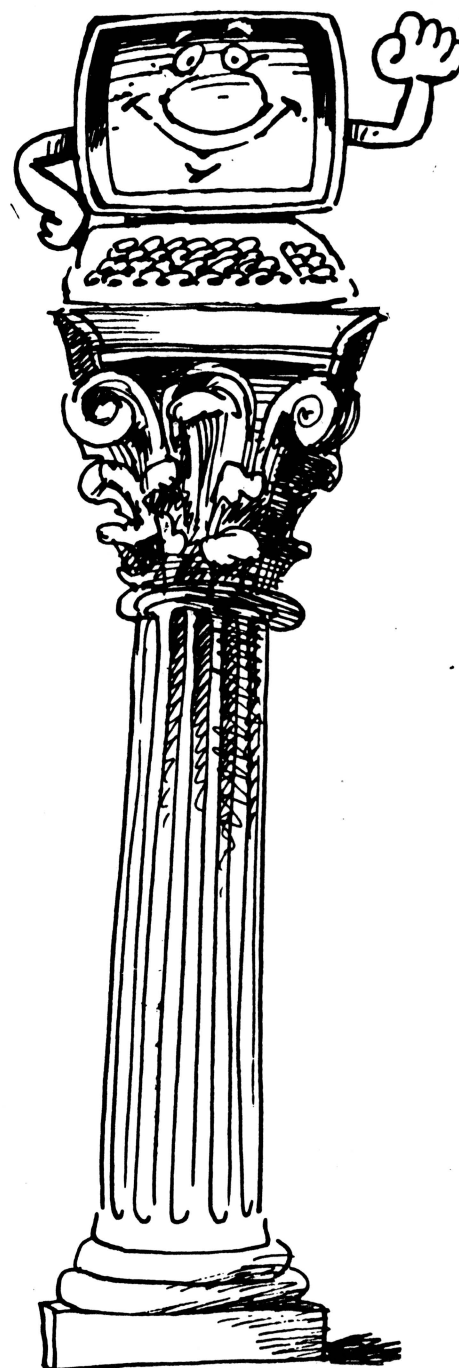
PATCH LISTING TWO by David Goben

- . BC6440X/FIX
- . Modify BC64/OVL for 40 x 100 spreadsheet grid
- . 1990 David Goben

- . Usage:
- . PATCH BC64/OVL BC6440X

.
D0B,24=28;F0B,24=40
D0B,39=50;F0B,39=80
D0B,4A=4F;F0B,4A=7F
D0B,87=50;F0B,87=80
D0F,67=28;F0F,67=40
D11,13=63;F11,13=3F
D11,22=50;F11,22=80
D11,33=27;F11,33=3F
D11,3A=B0;F11,3A=80
D11,47=50;F11,47=80

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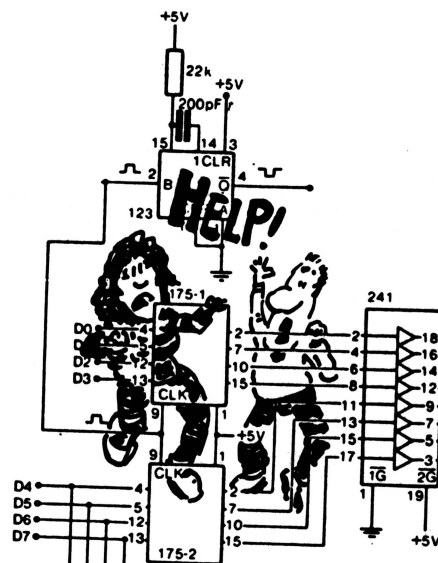


BIG BLUE WANTS YOU!
SAYS THE BIG BLUE BOYS.
AND THIS IS WHAT THEY THINK
ABOUT THEIR TOYS.

```

D11,53=27;F11,53=3F
D11,87=B0;F11,87=80
D1A,76=30;F1A,76=3E
D1C,A1=50;F1C,A1=80
D22,62=28;F22,62=40
D22,8A=64;F22,8A=40
D22,F2=27;F22,F2=3F
D23,19=63;F23,19=3F
D23,52=28;F23,52=40
D23,56=27;F23,56=3F
D23,6C=64;F23,6C=40
D23,70=63;F23,70=3F
D2A,6B=63;F2A,6B=3F
D2A,6F=CD CD 7F;F2A,6F=BD 38 E2
X'7FCD'=3E 28 BD D0 C3 6E 52
. EOP =====

```



PATCH LISTING THREE by Doug Mayfield / David Goblen

```

.BOOT63A/FIX Version 2.0
.(c) 1987 by DOUG MAYFIELD (CIS-74106,761)
.ALL RIGHTS RESERVED
.Mods to allow direct patching without use of CMDFILE by David Goblen, 1990
.
.This patch file generates the new logo, while the other included patch
.file, (BOOT63B/FIX) allows you to include up to four lines of text of
.your choice.
.
.Apply this patch with the following command line:
.
. PATCH SYS0/SYS.LSIDOS:d BOOT63A/FIX (0=N)
.

```

```

D10,D0=84 C7 01 52 30 FA 80 97 83 83 83 83 83 83 83 83
D10,E0=83 83 83 83 83 83 83 83 83 83 83 83 83 83 83
D10,F0=83 83 83 83 83 83 83 83 83 83 83 83 83 83 83
D11,00=83 83 83 83 83 83 83 83 83 83 83 83 83 83 83
D11,10=83 83 83 83 83 83 83 83 83 83 83 83 83 83 83
D11,20=83 83 83 83 AB 80 01 52 80 FA 80 95 80 97 83 83
D11,30=83 83 83 83 83 83 83 83 83 83 83 83 83 83 83
D11,40=83 83 83 83 83 83 83 83 83 83 83 83 83 83 83
D11,50=83 83 83 83 83 83 B3 B3 B3 B3 B3 B3 B3 B3 B3
D11,60=B3 B3 B3 B3 B3 B3 B3 B3 B3 B3 B3 B3 B3 B3 B3
D11,70=B3 B3 B3 B3 B3 93 AB 80 AA 80 01 25 D0 FA 80 95
D11,80=80 95 82 BF 97 81 80 80 80 BE 97 83 83 8B 84 80
D11,90=80 82 BF 83 83 83 8B B4 80 BE 83 83 83 AB 94 A8 BF

```

```

.memory address patches to extend SYS0/SYS
X'FAF0'=94 A8 BF 83 83 83 8D 80 74 6D 2E 80 95 80
X'FB19'=80 80 95 AA 80 AA 80 80 95 80 95 80 BF 95 80 80 80 80 BF B5 B0 B0 B0
X'FB30'=80 80 80 80 BF 80 80 80 80 BF 80 BF 80 80 80 AA
X'FB40'=95 AA BF B0 B0 B0 90 80 80 80 80 80 95 80
X'FB69'=80 80 95 AA 80 AA 80 80 95 80 95 80 BF 95 80 80 80 80 82 83 83 83 AB
X'FB80'=95 88 8C 80 BF 80 80 80 80 BF 80 BF 80 80 80 AA
X'FB90'=95 80 83 83 83 83 BF 80 80 80 80 80 95 80
X'FBB9'=80 80 95 AA 80 AA 80 80 95 80 95 80 BF 95 80 80 A0 80 90 80 80 80 AA
X'FBD0'=95 80 80 80 BF 80 80 80 80 BF 80 BF 80 80 80 AA

```

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```

X'FBE0'=95 A0 80 80 80 80 BF 80 80 80 80 80 95 80
X'FC09'=80 80 95 AA 80 AA 80 80 95 80 95 88 8F 8F 8F 8F 80 8B 8F 8F 8F 8F
X'FC20'=81 80 80 88 8F 8C 8C 8C 8E 81 80 8B 8C 8C 8C 8E
X'FC30'=81 82 8F 8F 8F 8F 87 80 80 80 80 80 B5 B0 B0 B0
X'FC40'=B0 B0 B0 B0 B0 B0 B0 B0 B0 B0 B0 B0 B0 B0 B0
X'FC50'=B0 B0 B0 B0 B0 B0 B0 B0 B0 B0 95 AA 80 AA 80
X'FC60'=80 95 80 8D 8C 8C 8C 8C 8C 8C 8C 8C 8C 8C 8C 8C
X'FC70'=8C 8C 8C 8C 8C 8C 8C 8C 8C 8C 8C 8C 8C 8C 8C 8C
X'FC80'=8C 8C 8C 8C 8C 8C 8C 8C 8C 8C 8C 8C 8C 8C 8C 8C
X'FC90'=8C 8C 8C 8C 8C 8C 8C 8C 8C 8C 8C 8C 8C 8C 8C 8C
X'FCA0'=8C 8C 8C 8C 8C 8C 8C 8C 8C 8C 8C 8C 8E 80 AA 80
X'FCB0'=80 8D 8C 8C 8C 8C 8C 8C 8C 8C 8C 8C 8C 8C 8C 8C
X'FCC0'=8C 8C 8C 8C 8C 8C 8C 8C 8C 8C 8C 8C 8C 8C 8C 8C
X'FCD0'=8C 8C 8C 8C 8C 8C 8C 8C 8C 8C 8C 8C 8C 8C 8C 8C
X'FCE0'=8C 8C 8C 8C 8C 8C 8C 8C 8C 8C 8C 8C 8C 8C 8C 8C
X'FCF0'=8C 8C 8C 8C 8C 8C 8C 8C 8C 8C 8C 8C 8C 8C 8E 80
. EOP =====

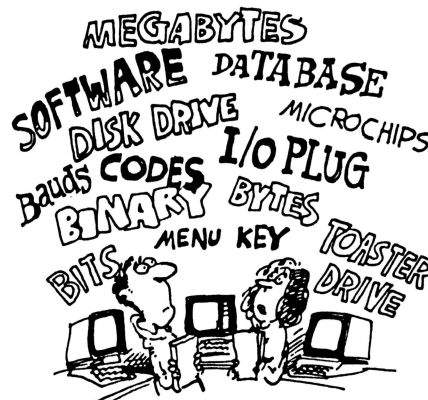
```

PATCH LISTING FOUR by Doug Mayfield / David Goben

```

.BOOT63B/FIX Version 2.0
.(c) by DOUG MAYFIELD (CIS-74106,761)
.Changes by David Goben
.
.This patch must only be used after creating your new SYS0/SYS file as
.described in the inclosed doc file.
.
.The text in the following lines may be changed to suit your individual
.needs, however there MUST be 27 spaces between the quotes, no more,
.no less. This patch file may be used as many times as you wish to
.change the text on the boot screen. By keeping it as separate file,
.the time was reduced on these later changes after the first run.
.
.Although there is room for four lines of text, I think the display
.looks better with text only in the lower three lines. If you also
.think so, just leave area between the quotes on the first patch line
.blank X'FAFE'="...")
.
.USE THE FOLLOWING PATCH COMMAND LINE:
.
.   PATCH SYS0/SYS.LSIDOS:0 BOOT63B/FIX
.
.
X'FAFE'="          "
X'FB4E'="    COMPUTER NEWS 80  "
X'FB9E'="      PO Box 680      "
X'FBEE'="    Casper, WY 82602  "
. EOP =====

```



PATCH LISTING 18 by Henry H. Herrdegen
Type exactly as shown: no margin, no tabs.

```
.Patch 18: Gary Campbell's faster "COPY", TRStimes 2.4 pg 13
PATCH *9:1(ADD=59A8,FIND=32E054,CHG=000000)
PATCH *9:1(ADD=5358,FIND=15,CHG=11)
PATCH *9:1(ADD=540E,FIND=3AA6549047C5,CHG=2A6561C3DB54)
PATCH *9:1(ADD=54EA,FIND=C22352,CHG=C3955F)
PATCH *9:1(ADD=54D0,FIND=CDF35221FFFF22BA,CHG=3EC9322A53CDF352)
PATCH *9:1(ADD=54D8,FIND=52CD9B59C2235206,CHG=C35753110063B700)
PATCH *9:1(ADD=54E1,FIND=119461210064CD20,CHG=ED527C47B7CA3854)
PATCH *9:1(ADD=54E9,FIND=44C22352,CHG=C5C31454)
PATCH *9:1(ADD=54E9,FIND=44C3955F,CHG=C5C31454)
PATCH *9:1(ADD=5F95,FIND=43616E2774204163,CHG=C22352ED4BD756CD)
PATCH *9:1(ADD=5F9D,FIND=7469766174652044,CHG=4244CD3944CAAD5F)
PATCH *9:1(ADD=5FA5,FIND=75616C207768696C,CHG=0000000000C30944)
PATCH *9:1(ADD=5FAD,FIND=6520524F5554,CHG=CD3F443AA453)
PATCH *9:1(ADD=5FB3,FIND=4520697320,CHG=47AFC3B153)
PATCH *0:1(ADD=5098,FIND=37,CHG=38)
BASIC PATCHSC
```

PATCH LISTING 19 by Henry H. Herrdegen

```
.PATCH19: Northern Bytes/HHH: permit '.' instead of '/' for
.Date entry and change the prompt.
PATCH *0:1(ADD=4EC3,FIND=2F,CHG=30)
PATCH *0:1(ADD=4FB8,FIND=28,CHG=38)
PATCH *0:1(ADD=5149,FIND=2F44442F,CHG=2E44442E)
PATCH *0:1(ADD=5098,FIND=38,CHG=39)
BASIC PATCHSC
```

Convert these files to ASCII format, calling them "PATCH18/BLD" and PATCH19/BLD;
exit Scripsit. Then load BASIC and "PATCHSC", and make following change and
additions:

In line 1: change the 86 03 07 date to: 90 03 06.

Add lines:

```
530 GOSUB 100: PRINT @576,;
540 PRINT " 'PATCH18': TRSDOS, G.Campbell's faster COPY, TRStimes 2.4
550 PRINT " 'PATCH19': TRSDOS, N.B./HHH, change Slash to period for Date.
560 PRINT
570 PRINT
580 PRINT
```

Save these changes; exit to DOS. You should kill the Scripsit files now (use D0
ZK), and make a backup to a new disk in drive 1, then apply the new patches to
this new disk: push the RESET, let AUTO load the program, then select <G> and call
for 18,19. When its finished, you have now a fully patched and corrected new
PUP1.3v2 disk, except for the PATCHES list. There are now 256 patch lines, and if
you want to update that list with my ALPHALST, that's another story. (below)

For continued instructions refer back to the article.

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CASPER, WYOMING 82602-0680



CLEARANCE

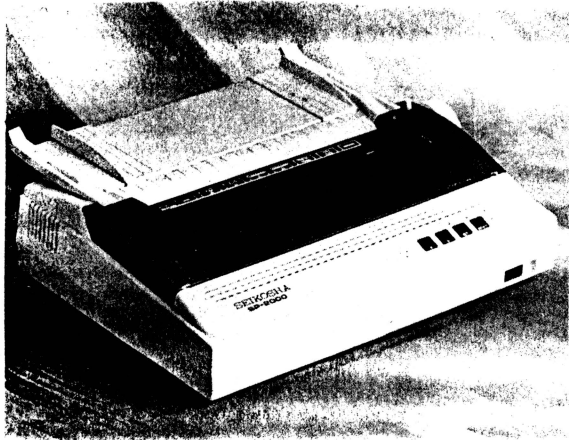
COMPUTER NEWS 80 has acquired a very limited supply of

64K 150ns Memory Chips
128 cycle refresh.

Our kit of 8 of these chips to expand your Model 4/4P/4D to 128 K
Shipped with Memory Check Program Disk and Instructions.

\$12.95
plus \$4.00 Shipping and Handling

PAL CHIP - needed with the expansion kit for Non-Gate Array
Computers \$8.00 each shipping charge included.



PRINTER



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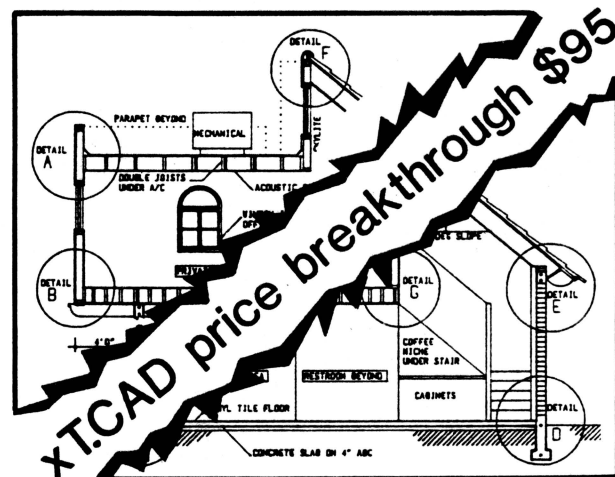
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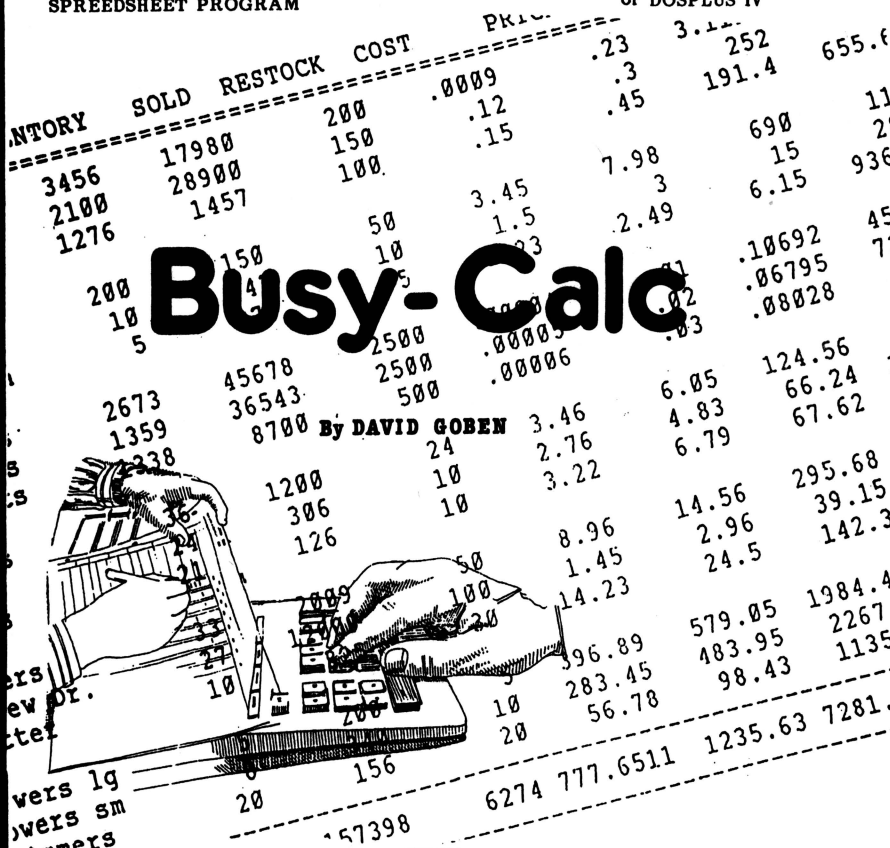
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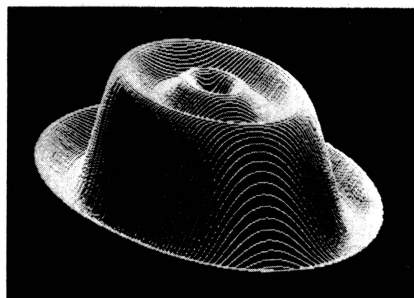
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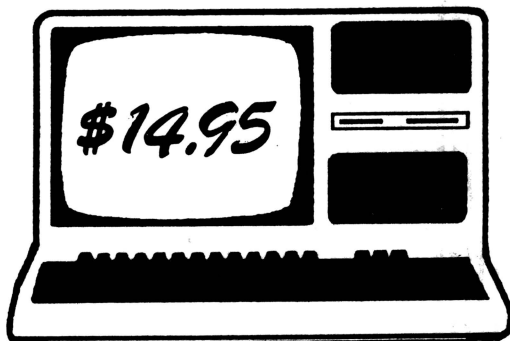
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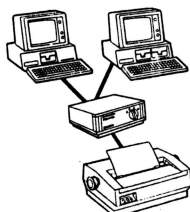
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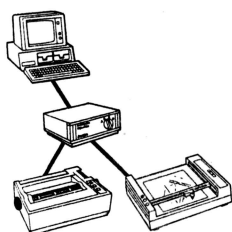
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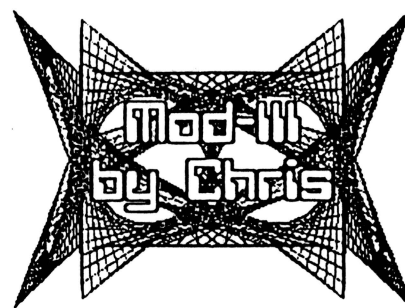
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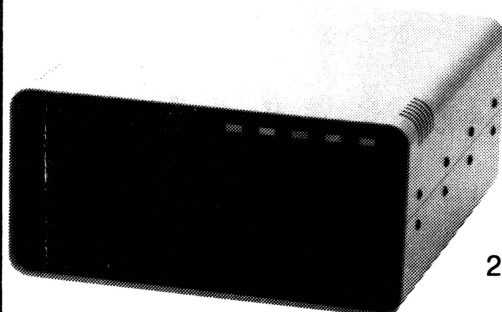
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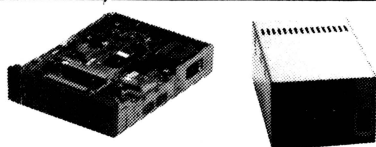
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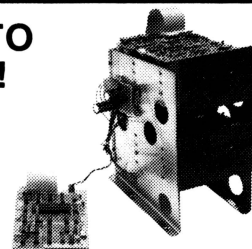
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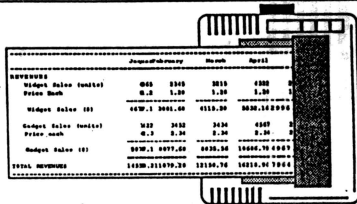
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